

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

10/523503
DT01 Rec'd PCT/PTC #4
02 FEB 2005

Atty. Docket No: 16313-0236

In re International patent application of

BASF PLANT SCIENCE GMBH

International Application No. PCT/US03/24364

International Filing Date: August 4, 2003

For: SUGAR AND LIPID METABOLISM REGULATORS IN PLANTS IV

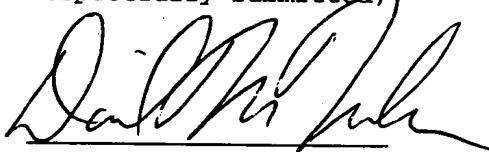
**Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Mail Stop PCT SEQUENCE**

STATEMENT ACCOMPANYING SEQUENCE LISTING

Dear Sir:

The undersigned hereby states that the Sequence Listing submitted concurrently herewith does not include matter which goes beyond the content of the application as filed and that the information recorded on the diskette submitted concurrently herewith is identical to the written Sequence Listing.

Respectfully submitted,



David M. Narkunas
Reg. No. 53,370

Sept. 30, 2003
Date

**HARBOR CONSULTING IP SERVICES, INC.
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Portsmouth, N.H.
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SEQUENCE LISTING

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<140> PCT/US03/24364

<141> 2003-08-04

<150> US 60/400,803

<151> 2002-08-02

<160> 163

<170> PatentIn version 3.2

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Arg Arg Ala Ile Ala Glu Tyr Leu Ser Arg Asp Leu Pro Tyr Lys Leu
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Val Ala Leu Ser Met Leu Ala Arg Pro Arg Ala Asn Ile Leu Leu Pro
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Pro Met Gly Val Phe Gly Ser Ile Val Pro Val Leu Thr Leu Gly Ser
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Thr Thr Asp Pro Ser Gly Ser Phe Lys Asp Pro Lys Ile Ile Glu Arg
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Gly Ser Pro Arg Ser Ile Ala Leu Asp Ile Glu Glu Leu Ala Asp Gly
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165 170 175

Glu Ile Thr Trp Ala Cys Leu Asn Tyr Ile Pro His Arg Leu Ala Gly
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195 200 205

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210 215 220

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 225 230 235 240

Asn Thr Gln Lys Trp Phe Pro Ile Ser Asn Val Ile Ala Gly Asn Pro
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Ile Ile Phe Ser Arg Gln Asp Met Glu Ile Leu Ser Lys Leu Gly Phe
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Leu His Arg Asp Leu Asn Val Ala Phe Ser Ser Trp Glu Phe Asp Pro
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35 40 45

Leu Thr Gln Gly Cys Cys Asn Gly Val Thr Asn Leu Lys Asn Met Ala
50 55 60

Ser Thr Thr Pro Asp Arg Gln Gln Ala Cys Arg Cys Leu Gln Ser Ala
65 70 75 80

Ala Lys Ala Val Gly Pro Gly Leu Asn Thr Ala Arg Ala Ala Gly Leu
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Gly Leu Ser Arg Asn Leu Gln Ala Thr Ser Arg Lys Ser Ile Val Thr
85 90 95

Asn Pro Cys Ala Ala Leu Asn Ile Gly Ser Ala Asp Ser Pro Arg Tyr
100 105 110

Arg Ala Thr Asn Met Glu Val Ile Glu Leu Asp Thr Asp Phe Gly Ser
115 120 125

Ser Phe Ser Gly Ala Leu Thr Asp Glu Gln Gly Arg Ile Arg Ala Ile
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145 150 155 160

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Gly Val Lys Arg Pro Met Pro Leu Val Arg Ile Leu Glu Val Glu Leu
195 200 205

Tyr Pro Thr Leu Leu Ser Lys Ala Arg Ser Phe Gly Leu Ser Asp Glu
210 215 220

Trp Ile Gln Val Leu Val Lys Lys Asp Pro Val Arg Arg Gln Val Leu
225 230 235 240

Arg Val Lys Gly Cys Leu Ala Gly Ser Lys Ala Glu Asn Leu Leu Glu
245 250 255

Gln Gly Asp Met Val Leu Ala Val Asn Lys Met Pro Val Thr Cys Phe
260 265 270

Asn Asp Ile Glu Ala Ala Cys Gln Thr Leu Asp Lys Gly Ser Tyr Ser
275 280 285

Asp Glu Asn Leu Asn Leu Thr Ile Leu Arg Gln Gly Gln Glu Leu Glu
290 295 300

Leu Val Val Gly Thr Asp Lys Arg Asp Gly Asn Gly Thr Thr Arg Val
305 310 315 320

Ile Asn Trp Cys Gly Cys Val Val Gln Asp Pro His Pro Ala Val Arg
325 330 335

Ala Leu Gly Phe Leu Pro Glu Glu Gly His Gly Val Tyr Val Thr Arg
340 345 350

Trp Cys His Gly Ser Pro Ala His Arg Tyr Gly Leu Tyr Ala Leu Gln
355 360 365

Trp Ile Val Glu Val Asn Gly Lys Lys Thr Pro Asp Leu Asn Ala Phe
 370 375 380

Ala Asp Ala Thr Lys Glu Leu Glu His Gly Gln Phe Val Arg Ile Arg
 385 390 395 400

Thr Val His Leu Asn Gly Lys Pro Arg Val Leu Thr Leu Lys Gln Asp
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Pro Met Leu Thr Gly Val Pro Pro Ser Thr Glu Cys Cys Gly Lys Leu
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Lys Glu Gln Gln Pro Cys Phe Cys Thr Tyr Ile Lys Asp Pro Arg Tyr
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 gatgttgc aaacctaaaac ggcggcggaa gaaatcgtag acgataactcc ccgaccgagt 240
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 gcttctccgc cgtcgcttga ttccgtgagc tgtgctggtt tagacggttc accatggccg 420
 agagacgaag gagaagtggc agagcaaagg cgaagagaag atgaaacaga gagtgaccaa 480
 gagttttaca aacaccacaa agcttctccg ttatcgagaa ttgaattcgc cgataactcgg 540
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 tggttaccgg agcagctaga cacggcggaa gaatcttgc tgaaagcaac aatgatattc 660
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 atgagaggcg agtggttta a 741

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 <211> 246
 <212> PRT
 <213> *Arabidopsis thaliana*

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Val Arg Pro Ile Ala Gln Arg Arg Leu Ala Phe Gly Ser Ser Thr Ser
 20 25 30

Gly Arg Thr Ala Asp Pro Glu Ile His Ala Gly Asn Asp Gly Ala Asp
 35 40 45

Pro Ala Ile Tyr Pro Arg Asp Pro Glu Gly Met Asp Asp Val Ala Asn
 50 55 60

Pro Lys Thr Ala Ala Glu Glu Ile Val Asp Asp Thr Pro Arg Pro Ser
 65 70 75 80

Leu Glu Glu Gln Pro Leu Val Pro Pro Lys Ser Pro Arg Ala Thr Ala
 85 90 95

His Lys Leu Glu Ser Thr Pro Val Gly His Pro Ser Glu Pro His Phe
 100 105 110

Gln Gln Lys Arg Lys Asn Ser Thr Ala Ser Pro Pro Ser Leu Asp Ser
 115 120 125

Val Ser Cys Ala Gly Leu Asp Gly Ser Pro Trp Pro Arg Asp Glu Gly
 130 135 140

Glu Val Glu Glu Gln Arg Arg Arg Glu Asp Glu Thr Glu Ser Asp Gln
 145 150 155 160

Glu Phe Tyr Lys His His Lys Ala Ser Pro Leu Ser Glu Ile Glu Phe
 165 170 175

Ala Asp Thr Arg Lys Pro Ile Thr Gln Ala Thr Asp Gly Thr Ala Tyr
 180 185 190

Pro Ala Gly Lys Asp Val Ile Gly Trp Leu Pro Glu Gln Leu Asp Thr
 195 200 205

Ala Glu Glu Ser Leu Met Lys Ala Thr Met Ile Phe Lys Arg Asn Ala
 210 215 220

Glu Arg Gly Asp Pro Glu Thr Phe Pro His Ser Arg Ile Leu Arg Glu
 225 230 235 240

Met Arg Gly Glu Trp Phe
 245

<210> 19
 <211> 1425
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 ggccttgtaa ctttgactcc gagtcaagat caagaagcct cctctgaagt ccttcccatt 240
 aattttgatg ggttagcgaa ggcggtaag aaaggagaca ctatcttgc tggacaatac 300
 ctcttcactg gtagtgaaac aacttcagtt tggcttgagg ttgaagaagt taaaggagat 360
 gatgtcattt gtatttcaag gaatgctgct actctgggtg gtccgttatt cacattgcac 420
 gtctctcaag ttcacattga tatgccaacc ctaactgaga aggataagga ggttataagt 480
 acatggggag ttcagaataa gatcgacttt ctctcattat cttattgtcg acatgcagaa 540
 gatgttcgccc aggcccgtaa gttgcttaac agttgtggtg acctctctca aacacaata 600
 tttgcgaaga ttgagaatga agagggacta acccactttg acgaaattct acaagaagca 660
 gatggcatta ttctttctcg tggaaatttg ggtatcgatc tacctccgga aaaggtgttt 720
 ttgttccaaa aggctgctct ttacaagtgt aacatggctg gaaagcctgc cgttcttact 780
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 atatgcttca cctcgtctgg cagagcagca aggttatttgc ccaaataccg tccaaactatg 1140
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 gaccatggga agcaagccgg agtgtatcaag tcacatgaca gagttgtggc ctgtcagaaa 1380
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<210> 20
 <211> 474

<212> PRT

<213> Arabidopsis thaliana

<400> 20

Met	Ser	Val	Ala	Arg	Phe	Asp	Phe	Ser	Trp	Cys	Asp	Ala	Asp	Tyr	His
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Gln	Glu	Thr	Leu	Glu	Asn	Leu	Lys	Ile	Ala	Val	Lys	Ser	Thr	Lys	Lys
								20		25			30		

Leu	Cys	Ala	Val	Met	Leu	Asp	Thr	Val	Gly	Pro	Glu	Leu	Gln	Val	Ile
							35		40			45			

Asn	Lys	Thr	Glu	Lys	Ala	Ile	Ser	Leu	Lys	Ala	Asp	Gly	Leu	Val	Thr
							50		55			60			

Leu	Thr	Pro	Ser	Gln	Asp	Gln	Glu	Ala	Ser	Ser	Glu	Val	Leu	Pro	Ile
							65		70		75		80		

Asn	Phe	Asp	Gly	Leu	Ala	Lys	Ala	Val	Lys	Lys	Gly	Asp	Thr	Ile	Phe
							85		90			95			

Val	Gly	Gln	Tyr	Leu	Phe	Thr	Gly	Ser	Glu	Thr	Thr	Ser	Val	Trp	Leu
							100		105			110			

Glu	Val	Glu	Glu	Val	Lys	Gly	Asp	Asp	Val	Ile	Cys	Ile	Ser	Arg	Asn
							115		120			125			

Ala	Ala	Thr	Leu	Gly	Gly	Pro	Leu	Phe	Thr	Leu	His	Val	Ser	Gln	Val
							130		135		140				

His	Ile	Asp	Met	Pro	Thr	Leu	Thr	Glu	Lys	Asp	Lys	Glu	Val	Ile	Ser
							145		150		155		160		

Thr	Trp	Gly	Val	Gln	Asn	Lys	Ile	Asp	Phe	Leu	Ser	Leu	Ser	Tyr	Cys
							165		170			175			

Arg	His	Ala	Glu	Asp	Val	Arg	Gln	Ala	Arg	Glu	Leu	Leu	Asn	Ser	Cys
							180		185			190			

Gly	Asp	Leu	Ser	Gln	Thr	Gln	Ile	Phe	Ala	Lys	Ile	Glu	Asn	Glu	Glu
							195		200			205			

Gly	Leu	Thr	His	Phe	Asp	Glu	Ile	Leu	Gln	Glu	Ala	Asp	Gly	Ile	Ile
							210		215			220			

Leu Ser Arg Gly Asn Leu Gly Ile Asp Leu Pro Pro Glu Lys Val Phe
225 230 235 240

Leu Phe Gln Lys Ala Ala Leu Tyr Lys Cys Asn Met Ala Gly Lys Pro
245 250 255

Ala Val Leu Thr Arg Val Val Asp Ser Met Thr Asp Asn Leu Arg Pro
260 265 270

Thr Arg Ala Glu Ala Thr Asp Val Ala Asn Ala Val Leu Asp Gly Ser
275 280 285

Asp Ala Ile Leu Leu Gly Ala Glu Thr Leu Arg Gly Leu Tyr Pro Val
290 295 300

Glu Thr Ile Ser Thr Val Gly Arg Ile Cys Cys Glu Ala Glu Lys Val
305 310 315 320

Phe Asn Gln Asp Leu Phe Phe Lys Lys Thr Val Lys Tyr Val Gly Glu
325 330 335

Pro Met Thr His Leu Glu Ser Ile Ala Ser Ser Ala Val Arg Ala Ala
340 345 350

Ile Lys Val Lys Ala Ser Val Ile Ile Cys Phe Thr Ser Ser Gly Arg
355 360 365

Ala Ala Arg Leu Ile Ala Lys Tyr Arg Pro Thr Met Pro Val Leu Ser
370 375 380

Val Val Ile Pro Arg Leu Thr Thr Asn Gln Leu Lys Trp Ser Phe Ser
385 390 395 400

Gly Ala Phe Glu Ala Arg Gln Ser Leu Ile Val Arg Gly Leu Phe Pro
405 410 415

Met Leu Ala Asp Pro Arg His Pro Ala Glu Ser Thr Ser Ala Thr Asn
420 425 430

Glu Ser Val Leu Lys Val Ala Leu Asp His Gly Lys Gln Ala Gly Val
435 440 445

Ile Lys Ser His Asp Arg Val Val Val Cys Gln Lys Val Gly Asp Ala
450 455 460

Ser Val Val Lys Ile Ile Glu Leu Glu Asp
465 470

<210> 21
<211> 936
<212> DNA
<213> *Arabidopsis thaliana*

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ccggttcc cacatttctc acaccgttta tctccgctt cgaatggtt cgttcctctt 180
aatggacetc tcttcttatac ttctcctcct tgaaaacttc tccagtctgc gacacccttg 240
caactggcgcg gaaaacggctc tggtttgaaa aaagtcgaag ctctgaatct tagattggat 300
cgaatttagaa gcagaactag gtttccgaga cagtttagggt tacagtctgt ggtaccaaac 360
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<210> 22
<211> 311
<212> PRT
<213> *Arabidopsis thaliana*

Lys Thr Arg Pro Phe Leu Thr Ala Ala Thr Ala Ser Gly Gly Thr Val
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Ser Leu Thr Pro Pro Gln Phe Ser Pro Leu Phe Pro His Phe Ser His
 35 40 45

Arg Leu Ser Pro Leu Ser Lys Trp Phe Val Pro Leu Asn Gly Pro Leu
 50 55 60

Phe Leu Ser Ser Pro Pro Trp Lys Leu Leu Gln Ser Ala Thr Pro Leu
 65 70 75 80

His Trp Arg Gly Asn Gly Ser Val Leu Lys Lys Val Glu Ala Leu Asn
 85 90 95

Leu Arg Leu Asp Arg Ile Arg Ser Arg Thr Arg Phe Pro Arg Gln Leu
 100 105 110

Gly Leu Gln Ser Val Val Pro Asn Ile Leu Thr Val Asp Arg Asn Asp
 115 120 125

Ser Lys Glu Glu Asp Gly Gly Lys Leu Val Lys Ser Phe Val Asn Val
 130 135 140

Pro Asn Met Ile Ser Met Ala Arg Leu Val Ser Gly Pro Val Leu Trp
 145 150 155 160

Trp Met Ile Ser Asn Glu Met Tyr Ser Ser Ala Phe Leu Gly Leu Ala
 165 170 175

Val Ser Gly Ala Ser Asp Trp Leu Asp Gly Tyr Val Ala Arg Arg Met
 180 185 190

Lys Ile Asn Ser Val Val Gly Ser Tyr Leu Asp Pro Leu Ala Asp Lys
 195 200 205

Val Leu Ile Gly Cys Val Ala Val Ala Met Val Gln Lys Asp Leu Leu
 210 215 220

His Pro Gly Leu Val Gly Ile Val Leu Leu Arg Asp Val Ala Leu Val
 225 230 235 240

Gly Gly Ala Val Tyr Leu Arg Ala Leu Asn Leu Asp Trp Arg Trp Lys
 245 250 255

Thr Trp Ser Asp Phe Phe Asn Leu Asp Gly Ser Ser Pro Gln Lys Val
 260 265 270

Glu Pro Leu Phe Ile Ser Lys Val Asn Thr Val Phe Gln Leu Thr Leu
 275 280 285

Val Ala Gly Ala Ile Leu Gln Pro Glu Phe Gly Asn Pro Asp Thr Gln
 290 295 300

Thr Trp Ile Thr Tyr Leu Arg
 305 310

<210> 23
 <211> 2427
 <212> DNA
 <213> *Arabidopsis thaliana*

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 tctgttaaga atcttagcatc aacgttcgat agagagatcg agaatttcct caataactcg 240
 gcgaggtctg cgttcccggt tggttcacca tcggcgtcgt ctttctcaaa tgaaattgg 300
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 attagtcgca aggttatggg gagatgggg cctgcgagag cgaagcttgg aatggatcta 420
 tcggcgatta agaaggcgat tgtgtctgag atggaattgg atgagcgtca gggagttttg 480
 gagatgagta gattgaggag acggcgtaat agtgcata gggatggg ttatggatggg 540
 gcggaggctg agagagatgg agaagctt attcgggtatt gggaaaccgat taggtctttg 600
 aagagtagat ttaaagagtt tgagaaacga agctcgat tagtgcgtt gggatgggg 660
 aacagtgaat ttgttgagaa gctcaaaacc agctttaat caatttacaa agaaactgat 720
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<210> 24

<211> 808

<212> PRT

<213> *Arabidopsis thaliana*

<400> 24

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Gly Thr Ser Ser Ser Ser Ser Leu Ser Met Thr Leu Ser Ser Thr Asn
20 25 30

Ala Leu Ser Phe Leu Ser Lys Gly Trp Arg Glu Val Trp Asp Ser Ala
35 40 45

Asp Ala Asp Leu Gln Leu Met Arg Asp Arg Ala Asn Ser Val Lys Asn
50 55 60

Leu Ala Ser Thr Phe Asp Arg Glu Ile Glu Asn Phe Leu Asn Asn Ser
65 70 75 80

Ala Arg Ser Ala Phe Pro Val Gly Ser Pro Ser Ala Ser Ser Phe Ser
85 90 95

Asn Glu Ile Gly Ile Met Lys Lys Leu Gln Pro Lys Ile Ser Glu Phe
100 105 110

Arg Arg Val Tyr Ser Ala Pro Glu Ile Ser Arg Lys Val Met Glu Arg
115 120 125

Trp Gly Pro Ala Arg Ala Lys Leu Gly Met Asp Leu Ser Ala Ile Lys
130 135 140

Lys Ala Ile Val Ser Glu Met Glu Leu Asp Glu Arg Gln Gly Val Leu
145 150 155 160

Glu Met Ser Arg Leu Arg Arg Arg Asn Ser Asp Arg Val Arg Phe
165 170 175

Thr Glu Phe Phe Ala Glu Ala Glu Arg Asp Gly Glu Ala Tyr Phe Gly
180 185 190

Asp Trp Glu Pro Ile Arg Ser Leu Lys Ser Arg Phe Lys Glu Phe Glu
195 200 205

Lys Arg Ser Ser Leu Glu Ile Leu Ser Gly Phe Lys Asn Ser Glu Phe
210 215 220

Val Glu Lys Leu Lys Thr Ser Phe Lys Ser Ile Tyr Lys Glu Thr Asp
225 230 235 240

Glu Ala Lys Asp Val Pro Pro Leu Asp Val Pro Glu Leu Leu Ala Cys
 245 250 255

Leu Val Arg Gln Ser Glu Pro Phe Leu Asp Gln Ile Gly Val Arg Lys
 260 265 270

Asp Thr Cys Asp Arg Ile Val Glu Ser Leu Cys Lys Cys Lys Ser Gln
 275 280 285

Gln Leu Trp Arg Leu Pro Ser Ala Gln Ala Ser Asp Leu Ile Glu Asn
 290 295 300

Asp Asn His Gly Val Asp Leu Asp Met Arg Ile Ala Ser Val Leu Gln
 305 310 315 320

Ser Thr Gly His His Tyr Asp Gly Gly Phe Trp Thr Asp Phe Val Lys
 325 330 335

Pro Glu Thr Pro Glu Asn Lys Arg His Val Ala Ile Val Thr Thr Ala
 340 345 350

Ser Leu Pro Trp Met Thr Gly Thr Ala Val Asn Pro Leu Phe Arg Ala
 355 360 365

Ala Tyr Leu Ala Lys Ala Ala Lys Gln Ser Val Thr Leu Val Val Pro
 370 375 380

Trp Leu Cys Glu Ser Asp Gln Glu Leu Val Tyr Pro Asn Asn Leu Thr
 385 390 395 400

Phe Ser Ser Pro Glu Glu Gln Glu Ser Tyr Ile Arg Lys Trp Leu Glu
 405 410 415

Glu Arg Ile Gly Phe Lys Ala Asp Phe Lys Ile Ser Phe Tyr Pro Gly
 420 425 430

Lys Phe Ser Lys Glu Arg Arg Ser Ile Phe Pro Ala Gly Asp Thr Ser
 435 440 445

Gln Phe Ile Ser Ser Lys Asp Ala Asp Ile Ala Ile Leu Glu Glu Pro
 450 455 460

Glu His Leu Asn Trp Tyr Tyr His Gly Lys Arg Trp Thr Asp Lys Phe
 465 470 475 480

Asn His Val Val Gly Ile Val His Thr Asn Tyr Leu Glu Tyr Ile Lys
485 490 495

Arg Glu Lys Asn Gly Ala Leu Gln Ala Phe Phe Val Asn His Val Asn
500 505 510

Asn Trp Val Thr Arg Ala Tyr Cys Asp Lys Val Leu Arg Leu Ser Ala
515 520 525

Ala Thr Gln Asp Leu Pro Lys Ser Val Val Cys Asn Val His Gly Val
530 535 540

Asn Pro Lys Phe Leu Met Ile Gly Glu Lys Ile Ala Glu Glu Arg Ser
545 550 555 560

Arg Gly Glu Gln Ala Phe Ser Lys Gly Ala Tyr Phe Leu Gly Lys Met
565 570 575

Val Trp Ala Lys Gly Tyr Arg Glu Leu Ile Asp Leu Met Ala Lys His
580 585 590

Lys Ser Glu Leu Gly Ser Phe Asn Leu Asp Val Tyr Gly Asn Gly Glu
595 600 605

Asp Ala Val Glu Val Gln Arg Ala Ala Lys Lys His Asp Leu Asn Leu
610 615 620

Asn Phe Leu Lys Gly Arg Asp His Ala Asp Asp Ala Leu His Lys Tyr
625 630 635 640

Lys Val Phe Ile Asn Pro Ser Ile Ser Asp Val Leu Cys Thr Ala Thr
645 650 655

Ala Glu Ala Leu Ala Met Gly Lys Phe Val Val Cys Ala Asp His Pro
660 665 670

Ser Asn Glu Phe Phe Arg Ser Phe Pro Asn Cys Leu Thr Tyr Lys Thr
675 680 685

Ser Glu Asp Phe Val Ser Lys Val Gln Glu Ala Met Thr Lys Glu Pro
690 695 700

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Leu Pro Leu Thr Pro Glu Gln Met Tyr Asn Leu Ser Trp Glu Ala Ala
705 710 715 720

Thr Gln Arg Phe Met Glu Tyr Ser Asp Leu Asp Lys Ile Leu Asn Asn
725 730 735

Gly Glu Gly Gly Arg Lys Met Arg Lys Ser Arg Ser Val Pro Ser Phe
740 745 750

Asn Glu Val Val Asp Gly Gly Leu Ala Phe Ser His Tyr Val Leu Thr
755 760 765

Gly Asn Asp Phe Leu Arg Leu Cys Thr Gly Ala Thr Pro Arg Thr Lys
770 775 780

Asp Tyr Asp Asn Gln His Cys Lys Asp Leu Asn Leu Val Pro Pro His
785 790 795 800

Val His Lys Pro Ile Phe Gly Trp
805

<210> 25

<211> 1176

<212> DNA

<213> Arabidopsis thaliana

<400> 25

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aaaccattgt ttcgttccgg acttggtcgg atttctgtta gccggcgaaa cctcacggcc 180

gttgctcgag ctgaatcaga ccagcttgggt gatgatgacc actcaaaggaa aattgataga 240

atccataact tgcagaatgt ggaagataag cagaagaaag caagccagct taagaaaaga 300

gtgatctttt gattggcat tggtttacct gttggatgtg ttgtgttagc tggaggatgg 360

gttttcactg tagcttttagc atcttctgtt ttatcggtt cccgcgaata ttgcgagctt 420

gttagaaagta gaggcatagc taaaggaatg actcctcctc cacgatatgt atctcgagtt 480

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<210> 26

<211> 391

<212> PRT

<213> Arabidopsis thaliana

<400> 26

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Gly Leu Arg Leu Pro Gly Asp Thr Lys Pro Leu Phe Arg Ser Gly Leu		
35	40	45

Gly Arg Ile Ser Val Ser Arg Arg Phe Leu Thr Ala Val Ala Arg Ala		
50	55	60

Glu Ser Asp Gln Leu Gly Asp Asp Asp His Ser Lys Gly Ile Asp Arg			
65	70	75	80

Ile His Asn Leu Gln Asn Val Glu Asp Lys Gln Lys Lys Ala Ser Gln		
85	90	95

Leu Lys Lys Arg Val Ile Phe Gly Ile Gly Ile Gly Leu Pro Val Gly		
100	105	110

Cys Val Val Leu Ala Gly Gly Trp Val Phe Thr Val Ala Leu Ala Ser		
115	120	125

Ser Val Phe Ile Gly Ser Arg Glu Tyr Phe Glu Leu Val Arg Ser Arg		
130	135	140

Gly Ile Ala Lys Gly Met Thr Pro Pro Pro Arg Tyr Val Ser Arg Val
145 150 155 160

Cys Ser Val Ile Cys Ala Leu Met Pro Ile Leu Thr Leu Tyr Phe Gly
165 170 175

Asn Ile Asp Ile Leu Val Thr Ser Ala Ala Phe Val Val Ala Ile Ala
180 185 190

Leu Leu Val Gln Arg Gly Ser Pro Arg Phe Ala Gln Leu Ser Ser Thr
195 200 205

Met Phe Gly Leu Phe Tyr Cys Gly Tyr Leu Pro Ser Phe Trp Val Lys
210 215 220

Leu Arg Cys Gly Leu Ala Ala Pro Ala Leu Asn Thr Gly Ile Gly Arg
225 230 235 240

Thr Trp Pro Ile Leu Leu Gly Gly Gln Ala His Trp Thr Val Gly Leu
245 250 255

Val Ala Thr Leu Ile Ser Phe Ser Gly Val Ile Ala Thr Asp Thr Phe
260 265 270

Ala Phe Leu Gly Gly Lys Thr Phe Gly Arg Thr Pro Leu Thr Ser Ile
275 280 285

Ser Pro Lys Lys Thr Trp Glu Gly Thr Ile Val Gly Leu Val Gly Cys
290 295 300

Ile Ala Ile Thr Ile Leu Leu Ser Lys Tyr Leu Ser Trp Pro Gln Ser
305 310 315 320

Leu Phe Ser Ser Val Ala Phe Gly Phe Leu Asn Phe Phe Gly Ser Val
325 330 335

Phe Gly Asp Leu Thr Glu Ser Met Ile Lys Arg Asp Ala Gly Val Lys
340 345 350

Asp Ser Gly Ser Leu Ile Pro Gly His Gly Gly Ile Leu Asp Arg Val
355 360 365

Asp Ser Tyr Ile Phe Thr Gly Ala Leu Ala Tyr Ser Phe Ile Lys Thr
 370 375 380

Ser Leu Lys Leu Tyr Gly Val
 385 390

<210> 27
 <211> 798
 <212> DNA
 <213> *Arabidopsis thaliana*

<400> 27
 atggctcaaa ccatgctgct tacttcaggc gtcaccgccc gccattttt gaggaacaag 60
 agcccttgg ctcagccaa agttcaccat ctcttcctct ctggaaactc tccggttgca 120
 ctaccatcta ggagacaatc attcggtcct ctcgctctct tcaaacccaa aaccaaagct 180
 gctcctaaaa aggttgagaa gccgaagagc aagggttggagg atggcatctt tggAACgtct 240
 ggtgggattg gtttcacaaa ggcgaatgag ctattcggtt gtcgtgttgc tatgatcggt 300
 ttcgctgcat cggtgcttgg tgaggcgttg acggggaaag ggatattagc tcagctgaat 360
 ctggagacag ggataccgat ttacgaagca gagccattgc ttctcttctt catcttgttc 420
 actctgttgg gagccattgg agctctcggc gacagaggaa aattcgtcga cgatcctccc 480
 accgggctcg agaaagccgt cattcctccc ggcaaaaacg tccgatctgc cctcggtctc 540
 aaagaacaag gtccattgtt tgggttcacg aaggcgaacg agttattcgt aggaagattg 600
 gcacagttgg gaatagcatt ttcactgata ggagagatta ttaccggaa aggagcatta 660
 gctcaactca acattgagac cggtataccca attcaagata tcgaaccact tgcctctta 720
 aacgttgctt tcttcttctt cgctgccatt aatcctggta atggaaaatt catcaccgat 780
 gatggtaag aaagctaa 798

<210> 28
 <211> 265
 <212> PRT
 <213> *Arabidopsis thaliana*

<400> 28
 Met Ala Gln Thr Met Leu Leu Thr Ser Gly Val Thr Ala Gly His Phe
 1 5 10 15

Leu Arg Asn Lys Ser Pro Leu Ala Gln Pro Lys Val His His Leu Phe
 20 25 30

31/121

Leu Ser Gly Asn Ser Pro Val Ala Leu Pro Ser Arg Arg Gln Ser Phe
35 40 45

Val Pro Leu Ala Leu Phe Lys Pro Lys Thr Lys Ala Ala Pro Lys Lys
50 55 60

Val Glu Lys Pro Lys Ser Lys Val Glu Asp Gly Ile Phe Gly Thr Ser
65 70 75 80

Gly Gly Ile Gly Phe Thr Lys Ala Asn Glu Leu Phe Val Gly Arg Val
85 90 95

Ala Met Ile Gly Phe Ala Ala Ser Leu Leu Gly Glu Ala Leu Thr Gly
100 105 110

Lys Gly Ile Leu Ala Gln Leu Asn Leu Glu Thr Gly Ile Pro Ile Tyr
115 120 125

Glu Ala Glu Pro Leu Leu Leu Phe Phe Ile Leu Phe Thr Leu Leu Gly
130 135 140

Ala Ile Gly Ala Leu Gly Asp Arg Gly Lys Phe Val Asp Asp Pro Pro
145 150 155 160

Thr Gly Leu Glu Lys Ala Val Ile Pro Pro Gly Lys Asn Val Arg Ser
165 170 175

Ala Leu Gly Leu Lys Glu Gln Gly Pro Leu Phe Gly Phe Thr Lys Ala
180 185 190

Asn Glu Leu Phe Val Gly Arg Leu Ala Gln Leu Gly Ile Ala Phe Ser
195 200 205

Leu Ile Gly Glu Ile Ile Thr Gly Lys Gly Ala Leu Ala Gln Leu Asn
210 215 220

Ile Glu Thr Gly Ile Pro Ile Gln Asp Ile Glu Pro Leu Val Leu Leu
225 230 235 240

Asn Val Ala Phe Phe Phe Ala Ala Ile Asn Pro Gly Asn Gly Lys
245 250 255

Phe Ile Thr Asp Asp Gly Glu Glu Ser
260 265

<210> 29
 <211> 1152
 <212> DNA
 <213> Arabidopsis thaliana

<400> 29
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 acaaagcgtg tgccgtgcga gaaaccgcct ttctcggtgg gagatctgaa gaaagcaatc 120
 cccgcgcatt gtttcaaaccg ctcaatccct cgctctttct cctacccat cagtgacatc 180
 attatacgctt catgcttcta ctacgtcgcc accaattact tctcttcctt ccctcagcct 240
 ctctcttact tggcttggcc actctattgg gcctgtcaag gctgtgtcct aactggtac 300
 tgggtcatag cccacgaatg cggtcaccac gcattcagcg actaccaatg gctggatgac 360
 acagttggtc ttatcttcca ttccttcctc ctgcgtccctt acttcttcctg gaagtatagt 420
 catcgccgtc accattccaa cactggatcc ctgcggaaagag atgaagtatt tgccttcaaag 480
 cagaaatcg caatcaagtg gtacggaaa tacctcaaca acccttttgg acgcacatcg 540
 atgttaaccg tccagtttgcgtt cctcggtgg cccttgcgtt tagcctttaa cgtctctggc 600
 agaccgtatg acgggttcgc ttgcatttc ttccccaaacg ctcccatcta caatgaccga 660
 gaacgcctcc agatataacct ctctgatgcg ggtattctag ccgtctgttt tggctttac 720
 cgttacgctg ctgcacaagg gatggctcg atgatctgcc tctacggagt accgcttcgt 780
 atagtgaatg cgttcctcggtt cttgatcaact tacttgcagc acactcatcc ctcgttgcct 840
 cactacgatt catcagagtg ggactggctc aggggagctt tggctaccgt agacagagac 900
 tacggaatct tgaacaagggt gttccacaac attacagaca cacacgtggc tcatcacctg 960
 ttctcgacaa tgccgcctta taacgcaatg gaagctacaa aggcataaaa gccaattctg 1020
 ggagactatt accagttcga tggaacacccg tggatgttag cgatgtatag ggaggcaaag 1080
 gagtgtatct atgtagaacc ggacagggaa ggtgacaaga aaggtgtgta ctggtacaac 1140
 aataagttat ga 1152

<210> 30
 <211> 383
 <212> PRT
 <213> Arabidopsis thaliana

<400> 30
 Met Gly Ala Gly Gly Arg Met Pro Val Pro Thr Ser Ser Lys Lys Ser
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Glu Thr Asp Thr Thr Lys Arg Val Pro Cys Glu Lys Pro Pro Phe Ser
 20 25 30

Val Gly Asp Leu Lys Lys Ala Ile Pro Pro His Cys Phe Lys Arg Ser
 35 40 45

Ile Pro Arg Ser Phe Ser Tyr Leu Ile Ser Asp Ile Ile Ile Ala Ser
 50 55 60

Cys Phe Tyr Tyr Val Ala Thr Asn Tyr Phe Ser Leu Leu Pro Gln Pro
 65 70 75 80

Leu Ser Tyr Leu Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val
 85 90 95

Leu Thr Gly Ile Trp Val Ile Ala His Glu Cys Gly His His Ala Phe
 100 105 110

Ser Asp Tyr Gln Trp Leu Asp Asp Thr Val Gly Leu Ile Phe His Ser
 115 120 125

Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser His Arg Arg His
 130 135 140

His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys
 145 150 155 160

Gln Lys Ser Ala Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu
 165 170 175

Gly Arg Ile Met Met Leu Thr Val Gln Phe Val Leu Gly Trp Pro Leu
 180 185 190

Tyr Leu Ala Phe Asn Val Ser Gly Arg Pro Tyr Asp Gly Phe Ala Cys
 195 200 205

His Phe Phe Pro Asn Ala Pro Ile Tyr Asn Asp Arg Glu Arg Leu Gln
 210 215 220

Ile Tyr Leu Ser Asp Ala Gly Ile Leu Ala Val Cys Phe Gly Leu Tyr
 225 230 235 240

Arg Tyr Ala Ala Ala Gln Gly Met Ala Ser Met Ile Cys Leu Tyr Gly
 245 250 255

Val Pro Leu Leu Ile Val Asn Ala Phe Leu Val Leu Ile Thr Tyr Leu
 260 265 270

Gln His Thr His Pro Ser Leu Pro His Tyr Asp Ser Ser Glu Trp Asp
 275 280 285

Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg Asp Tyr Gly Ile Leu
 290 295 300

Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His Leu
 305 310 315 320

Phe Ser Thr Met Pro Pro Tyr Asn Ala Met Glu Ala Thr Lys Ala Ile
 325 330 335

Lys Pro Ile Leu Gly Asp Tyr Tyr Gln Phe Asp Gly Thr Pro Trp Tyr
 340 345 350

Val Ala Met Tyr Arg Glu Ala Lys Glu Cys Ile Tyr Val Glu Pro Asp
 355 360 365

Arg Glu Gly Asp Lys Lys Gly Val Tyr Trp Tyr Asn Asn Lys Leu
 370 375 380

<210> 31
 <211> 1056
 <212> DNA
 <213> Brassica napus

<400> 31	
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gactcattca cctggaaact caccgctgct gactccattc tccctccctc ctccgcccgt	120
gtgaaagagt ccattccggc catcgacctc tccgatcctg acgtcaccaa tttgttagga	180
aatgcattgca aaacgtgggg agcgtttcag atagccaacc acggggtctc tcaaagtctc	240
ctcgacgacg ttgaatctct ctccaaaacc ttttcgata tgccgtcaga gagggaaactc	300
gaggctgctt cctctaataa aggagttagt gggtaacggag aacctcgaat ctcttttc	360
ttcgagaaga aaatgtggtc tgaagggttg acaatcgccg acggctccta ccgcaaccag	420
ttccttacta tttggccccc tgattacacc aaatactgctc gaataatcgaa agagtacaag	480

ggtgaaatgg aaaaattagc aagcagactt ctatcatgca tattaggatc acttgggtgc	540
accgttagacg acatcgaatg ggctaagaag accgagaaat ctgaatcaaa aatgggccaa	600
agcgtcatac gactaaacca ttacccggtt tgtcctgagc cagaaagagc catgggtcta	660
gccgctcata ccgactcatg tcttctaacc atttgcacc agagcaacat gggagggcta	720
caagtgttca aagaagagtc cggttggtt acggtagagc ccattcctgg tttcttgc	780
gtcaacatcg gcgacctctt tcacattcta tcgaatgggaa agttccttag cgtggttcac	840
cgagcaaggg ttaaccgaac caagtcaaga atatcgatag cgtatctgtg ggggtggcca	900
gccggtaag tggagataag tccaatatca aagatagttt gtccgggttgg accgtgtcta	960
taccggccag ttacttggag tgaatatctc cgaatcaaattt tgagggtttt cgacaaggca	1020
ttggacgcaa ttggagtcgt taatcccacc aattga	1056

<210> 32
 <211> 351
 <212> PRT
 <213> Brassica napus

<400> 32
 Met Ala Ser Ile Asn Glu Asp Val Ser Ile Gly Asn Leu Gly Ser Leu
 1 5 10 15

Gln Thr Leu Pro Asp Ser Phe Thr Trp Lys Leu Thr Ala Ala Asp Ser
 20 25 30

Ile Leu Pro Pro Ser Ser Ala Ala Val Lys Glu Ser Ile Pro Val Ile
 35 40 45

Asp Leu Ser Asp Pro Asp Val Thr Asn Leu Leu Gly Asn Ala Cys Lys
 50 55 60

Thr Trp Gly Ala Phe Gln Ile Ala Asn His Gly Val Ser Gln Ser Leu
 65 70 75 80

Leu Asp Asp Val Glu Ser Leu Ser Lys Thr Phe Phe Asp Met Pro Ser
 85 90 95

Glu Arg Lys Leu Glu Ala Ala Ser Ser Asn Lys Gly Val Ser Gly Tyr
 100 105 110

Gly Glu Pro Arg Ile Ser Leu Phe Phe Glu Lys Lys Met Trp Ser Glu
 115 120 125

Gly Leu Thr Ile Ala Asp Gly Ser Tyr Arg Asn Gln Phe Leu Thr Ile
130 135 140

Trp Pro Arg Asp Tyr Thr Lys Tyr Cys Gly Ile Ile Glu Glu Tyr Lys
145 150 155 160

Gly Glu Met Glu Lys Leu Ala Ser Arg Leu Leu Ser Cys Ile Leu Gly
165 170 175

Ser Leu Gly Val Thr Val Asp Asp Ile Glu Trp Ala Lys Lys Thr Glu
180 185 190

Lys Ser Glu Ser Lys Met Gly Gln Ser Val Ile Arg Leu Asn His Tyr
195 200 205

Pro Val Cys Pro Glu Pro Glu Arg Ala Met Gly Leu Ala Ala His Thr
210 215 220

Asp Ser Cys Leu Leu Thr Ile Leu His Gln Ser Asn Met Gly Gly Leu
225 230 235 240

Gln Val Phe Lys Glu Glu Ser Gly Trp Val Thr Val Glu Pro Ile Pro
245 250 255

Gly Val Leu Val Val Asn Ile Gly Asp Leu Phe His Ile Leu Ser Asn
260 265 270

Gly Lys Phe Pro Ser Val Val His Arg Ala Arg Val Asn Arg Thr Lys
275 280 285

Ser Arg Ile Ser Ile Ala Tyr Leu Trp Gly Gly Pro Ala Gly Glu Val
290 295 300

Glu Ile Ser Pro Ile Ser Lys Ile Val Gly Pro Val Gly Pro Cys Leu
305 310 315 320

Tyr Arg Pro Val Thr Trp Ser Glu Tyr Leu Arg Ile Lys Phe Glu Val
325 330 335

Phe Asp Lys Ala Leu Asp Ala Ile Gly Val Val Asn Pro Thr Asn
340 345 350

<210> 33
 <211> 639
 <212> DNA
 <213> Brassica napus

<400> 33
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 aatgatactg atattgatga tcctgatcat gatcatcatg atgggtttca gcaagaggag 120
 agtggatgga caacttatct tgaagatttc tcaaataat acagaactca tcctgaagat 180
 aacgatcatc aagataagag ttctgtttcg attctggacg cctctcccttc tctggctcc 240
 gacgcccaca ctgacgcatt ttctggccgg agttttccag ttaattttcc ggtgaaattg 300
 aagtttggga aggcaagaac caaaaagatt tgtgaggatg attctttgga ggatacggct 360
 agctctccgg ttaatagccc taaggtcagt cagattgaac atattcagac gcctcctaga 420
 aaacatgagg actatgtctc ttcttagttc gttatggaa atatgagtgg catggggat 480
 catcaaatcc aaatccaaga aggagatgaa caaaaagttga cgatgatgag gaatctcaga 540
 gaaggaaaca acagtaaacag taataatatg gacttgaggg ctagaggatt atgcgtcgtc 600
 cctatttcca tgggttggtaa ttttaatggc cgcttctga 639

<210> 34
 <211> 212
 <212> PRT
 <213> Brassica napus

<400> 34
 Met Ala Thr Phe Ser Cys Asn Ser Tyr Glu Gln Asn His Ala Pro Phe
 1 5 10 15

Asp Arg His Ala Asn Asp Thr Asp Ile Asp Asp Pro Asp His Asp His
 20 25 30

His Asp Gly Val Gln Gln Glu Glu Ser Gly Trp Thr Thr Tyr Leu Glu
 35 40 45

Asp Phe Ser Asn Gln Tyr Arg Thr His Pro Glu Asp Asn Asp His Gln
 50 55 60

Asp Lys Ser Ser Cys Ser Ile Leu Asp Ala Ser Pro Ser Leu Val Ser
 65 70 75 80

Asp Ala Ala Thr Asp Ala Phe Ser Gly Arg Ser Phe Pro Val Asn Phe
 85 90 95

Pro Val Lys Leu Lys Phe Gly Lys Ala Arg Thr Lys Lys Ile Cys Glu
 100 105 110

Asp Asp Ser Leu Glu Asp Thr Ala Ser Ser Pro Val Asn Ser Pro Lys
 115 120 125

Val Ser Gln Ile Glu His Ile Gln Thr Pro Pro Arg Lys His Glu Asp
 130 135 140

Tyr Val Ser Ser Ser Phe Val Met Gly Asn Met Ser Gly Met Gly Asp
 145 150 155 160

His Gln Ile Gln Ile Gln Glu Gly Asp Glu Gln Lys Leu Thr Met Met
 165 170 175

Arg Asn Leu Arg Glu Gly Asn Asn Ser Asn Ser Asn Asn Met Asp Leu
 180 185 190

Arg Ala Arg Gly Leu Cys Val Val Pro Ile Ser Met Leu Gly Asn Phe
 195 200 205

Asn Gly Arg Phe
 210

<210> 35

<211> 1143

<212> DNA

<213> *Arabidopsis thaliana*

<400> 35

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gattcttcga tcttcgatgc aaagctcctt aatcagcact cacaccat acctcaacag 120

ttcgtatggc ccgaccacga gaaaccttctt acggatgttc aacctctcca agtcccactc 180

atagaccttag ccggtttccctt ctccggcgcac tcgtgcttgg catcgaggc tactagactc 240

gtctcaaagg ctgcaacgaa acatggcttc ttcctaattca ctaaccatgg tatcgatgag 300

agcctcttgtt ctcgtgccta tctgcataatg gactctttctt ttaaggcccc ggcttgtgag 360

aagcagaagg ctcagaggaa gtggggtgag agctccgggtt acgcttagtag tttcgtcggg 420

agattctcctt caaagctccc gtggaaaggag actctgtcgt ttaagttctc tccccgaggag 480

aagatccatt cccaaaccgt taaagactttt gtttctaaga aaatgtgcga tggatacgaa 540

gatttcggga aggtttatca agaataacgca gaggccatga acactctctc actaaagatc 600

atggagcttc ttggaatgag tcttgggtc gagaggagat atttaaaga gttttcgaa	660
gacagcgatt caatattccg gttgaattac tacccgcagt gcaagcaacc ggagcttgca	720
ctagggacag gaccccaactg cgacccaaca tctctaacca tacttcatca agaccaagtt	780
ggcggctcgc aagtttcgt ggacaacaaa tggcaatcca ttccctctaa ccctcacgct	840
ttcgtggtga acataggcga caccttcatg gctctaacga atggaagata caagagttgt	900
ttgcacatcggg cggtggtgaa cagcgagaga gaaaggaaga cgtttgcatt ctccctatgt	960
ccgaaagggg aaaaagtggt gaagccacca gaagaactag taaacggagt gaagtctggt	1020
gaaagaaagt atcctgattt tacgtggtct atgtttctcg agttcacaca gaagcattat	1080
agggcagaca tgaacactct tgacgagttc tcaatttggc ttaagaacag aagaagttc	1140
taa	1143

<210> 36

<211> 380

<212> PRT

<213> *Arabidopsis thaliana*

<400> 36

Met Ala Thr Glu Cys Ile Ala Thr Val Pro Gln Ile Phe Ser Glu Asn			
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Lys Thr Lys Glu Asp Ser Ser Ile Phe Asp Ala Lys Leu Leu Asn Gln		
20	25	30

His Ser His His Ile Pro Gln Gln Phe Val Trp Pro Asp His Glu Lys		
35	40	45

Pro Ser Thr Asp Val Gln Pro Leu Gln Val Pro Leu Ile Asp Leu Ala		
50	55	60

Gly Phe Leu Ser Gly Asp Ser Cys Leu Ala Ser Glu Ala Thr Arg Leu			
65	70	75	80

Val Ser Lys Ala Ala Thr Lys His Gly Phe Phe Leu Ile Thr Asn His		
85	90	95

Gly Ile Asp Glu Ser Leu Leu Ser Arg Ala Tyr Leu His Met Asp Ser		
100	105	110

Phe Phe Lys Ala Pro Ala Cys Glu Lys Gln Lys Ala Gln Arg Lys Trp		
115	120	125

Gly Glu Ser Ser Gly Tyr Ala Ser Ser Phe Val Gly Arg Phe Ser Ser
 130 135 140

Lys Leu Pro Trp Lys Glu Thr Leu Ser Phe Lys Phe Ser Pro Glu Glu
 145 150 155 160

Lys Ile His Ser Gln Thr Val Lys Asp Phe Val Ser Lys Lys Met Cys
 165 170 175

Asp Gly Tyr Glu Asp Phe Gly Lys Val Tyr Gln Glu Tyr Ala Glu Ala
 180 185 190

Met Asn Thr Leu Ser Leu Lys Ile Met Glu Leu Leu Gly Met Ser Leu
 195 200 205

Gly Val Glu Arg Arg Tyr Phe Lys Glu Phe Phe Glu Asp Ser Asp Ser
 210 215 220

Ile Phe Arg Leu Asn Tyr Tyr Pro Gln Cys Lys Gln Pro Glu Leu Ala
 225 230 235 240

Leu Gly Thr Gly Pro His Cys Asp Pro Thr Ser Leu Thr Ile Leu His
 245 250 255

Gln Asp Gln Val Gly Leu Gln Val Phe Val Asp Asn Lys Trp Gln
 260 265 270

Ser Ile Pro Pro Asn Pro His Ala Phe Val Val Asn Ile Gly Asp Thr
 275 280 285

Phe Met Ala Leu Thr Asn Gly Arg Tyr Lys Ser Cys Leu His Arg Ala
 290 295 300

Val Val Asn Ser Glu Arg Glu Arg Lys Thr Phe Ala Phe Phe Leu Cys
 305 310 315 320

Pro Lys Gly Glu Lys Val Val Lys Pro Pro Glu Glu Leu Val Asn Gly
 325 330 335

Val Lys Ser Gly Glu Arg Lys Tyr Pro Asp Phe Thr Trp Ser Met Phe
 340 345 350

Leu Glu Phe Thr Gln Lys His Tyr Arg Ala Asp Met Asn Thr Leu Asp
 355 360 365

Glu Phe Ser Ile Trp Leu Lys Asn Arg Arg Ser Phe
 370 375 380

<210> 37

<211> 1908

<212> DNA

<213> *Arabidopsis thaliana*

<400> 37

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tccgacacac	acaggcatca	aacagaaggt	ggtgggacac	agttcgtgtc	tctctcagac	180
aaggggagta	acatgccggt	ttctgtatgaa	ggagagggag	agacgaagat	gaagaggact	240
cagatgcctc	actccgttgg	aaaattcggt	actagcagcg	attcaggaac	agggaaagaag	300
aaggatgaga	aagaggagca	tgagaaggcg	tcgctagagg	atattcatgg	gtatagagcc	360
aatgctcagc	agaagtcaat	ggatagtata	aaagcagcag	aggaaaggta	taacaaggct	420
aaggagagtt	tgagccatag	tggacaagaa	gctcgtggag	gaagaggtga	agaaatggtg	480
ggaaaaggc	gggacagtgg	tgtccgtgtt	tctcacgttg	gggctgttgg	tggcggtgg	540
ggaggtgagg	aaaaagagag	tggtgtacat	ggctttcatg	gggagaaaagc	acgacatgct	600
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ggtgttgg	gtcgtacgt	aaaagatacg	gtagccgaga	aaggacagca	agctaaggaa	720
agtgttaggag	aaggtgctca	gaaagcgggc	agtgtacga	gtgagaaagc	tcaagagact	780
tccgagttatg	caacagagaa	aggaaaaagaa	gctggaaata	tgacagctga	acaggcggcg	840
agagcaaaag	actatgctct	gcagaaagct	gttgaagcta	aagagactgc	ggcggagaaa	900
gctcagagag	cttccgagta	tatgaaggaa	acaggaagca	cagcggctga	acaggctgcg	960
agagctaaag	attacactct	tcagaaagct	gtggaagcta	aagatgttgc	agctgagaaa	1020
gctcagagag	cttcagaata	catgacagag	acaggaaaac	aagccggaaa	tgttgcagct	1080
cagaaaggc	aagaggcagc	ttcaatgaca	gcaaaagcta	aagattatac	tgttcagaaa	1140
gccggtgaag	cagctgggta	cataaaagaa	acgacagtgg	aaggagggaaa	aggagctgca	1200
cattatgcag	gagtggcagc	tgagaaaagcc	gctgcggttg	ggtggacagc	ggcacatttc	1260
accacggaga	aagtggtgca	agggacgaaa	gcgggtgcag	gtacagtgg	aggtgctgtg	1320

gggtacgcag	ggcataaggc	ggtggaaagta	ggatctaagg	cagtggactt	gactaaggag	1380
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caacacagag	accaagagat	gcatcaggga	ggtgaggaag	aaaagcaacc	agggtttgtc	1500
tcaggagcaa	ggagagactt	tggagaagag	tacgggaaag	aaagagggag	tgagaaagat	1560
gtctacggct	atggagcaaa	aggaataccc	ggagaaggga	ggggagatgt	tggggaggca	1620
gagtacggaa	gagggagtga	gaaagatgtc	ttcggatatg	gaccaaaagg	cacggtcgaa	1680
gaagcaagga	gagacgttgg	agaagaatac	ggaggaggaa	gaggcagtga	gagatatgtt	1740
gaagaagaag	gggttggagc	gggaggggtg	cttggggcaa	tcggcgagac	tatagctgag	1800
attgcacaga	cgacaaagaa	catagtgatt	ggtgatgcgc	ctgtgaggac	acatgagcat	1860
ggaactactg	atcctgacta	tatgagacgg	gaacatggac	aacgttga		1908

<210> 38

<211> 635

<212> PRT

<213> *Arabidopsis thaliana*

<400> 38

Met	Ala	Ser	Glu	Gln	Ala	Arg	Arg	Glu	Asn	Lys	Val	Thr	Glu	Arg	Glu
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Val	Gln	Val	Glu	Lys	Asp	Arg	Val	Pro	Lys	Met	Thr	Ser	His	Phe	Glu
20								25					30		

Ser	Met	Ala	Glu	Lys	Gly	Lys	Asp	Ser	Asp	Thr	His	Arg	His	Gln	Thr
35							40				45				

Glu	Gly	Gly	Gly	Thr	Gln	Phe	Val	Ser	Leu	Ser	Asp	Lys	Gly	Ser	Asn
50					55				60						

Met	Pro	Val	Ser	Asp	Glu	Gly	Glu	Glu	Thr	Lys	Met	Lys	Arg	Thr
65				70				75			80			

Gln	Met	Pro	His	Ser	Val	Gly	Lys	Phe	Val	Thr	Ser	Ser	Asp	Ser	Gly
85								90			95				

Thr	Gly	Lys	Lys	Asp	Glu	Lys	Glu	Glu	His	Glu	Lys	Ala	Ser	Leu
100					105					110				

Glu	Asp	Ile	His	Gly	Tyr	Arg	Ala	Asn	Ala	Gln	Gln	Lys	Ser	Met	Asp
115							120				125				

Ser Ile Lys Ala Ala Glu Glu Arg Tyr Asn Lys Ala Lys Glu Ser Leu
130 135 140

Ser His Ser Gly Gln Glu Ala Arg Gly Gly Arg Gly Glu Glu Met Val
145 150 155 160

Gly Lys Gly Arg Asp Ser Gly Val Arg Val Ser His Val Gly Ala Val
165 170 175

Gly Gly Gly Gly Glu Glu Lys Glu Ser Gly Val His Gly Phe
180 185 190

His Gly Glu Lys Ala Arg His Ala Glu Leu Leu Ala Ala Gly Gly Glu
195 200 205

Glu Met Arg Glu Arg Glu Gly Lys Glu Ser Ala Gly Gly Val Gly Gly
210 215 220

Arg Ser Val Lys Asp Thr Val Ala Glu Lys Gly Gln Gln Ala Lys Glu
225 230 235 240

Ser Val Gly Glu Gly Ala Gln Lys Ala Gly Ser Ala Thr Ser Glu Lys
245 250 255

Ala Gln Arg Ala Ser Glu Tyr Ala Thr Glu Lys Gly Lys Glu Ala Gly
260 265 270

Asn Met Thr Ala Glu Gln Ala Ala Arg Ala Lys Asp Tyr Ala Leu Gln
275 280 285

Lys Ala Val Glu Ala Lys Glu Thr Ala Ala Glu Lys Ala Gln Arg Ala
290 295 300

Ser Glu Tyr Met Lys Glu Thr Gly Ser Thr Ala Ala Glu Gln Ala Ala
305 310 315 320

Arg Ala Lys Asp Tyr Thr Leu Gln Lys Ala Val Glu Ala Lys Asp Val
325 330 335

Ala Ala Glu Lys Ala Gln Arg Ala Ser Glu Tyr Met Thr Glu Thr Gly
340 345 350

Lys Gln Ala Gly Asn Val Ala Ala Gln Lys Gly Gln Glu Ala Ala Ser
 355 360 365

Met Thr Ala Lys Ala Lys Asp Tyr Thr Val Gln Lys Ala Gly Glu Ala
 370 375 380

Ala Gly Tyr Ile Lys Glu Thr Thr Val Glu Gly Gly Lys Gly Ala Ala
 385 390 395 400

His Tyr Ala Gly Val Ala Ala Glu Lys Ala Ala Ala Val Gly Trp Thr
 405 410 415

Ala Ala His Phe Thr Thr Glu Lys Val Val Gln Gly Thr Lys Ala Val
 420 425 430

Ala Gly Thr Val Glu Gly Ala Val Gly Tyr Ala Gly His Lys Ala Val
 435 440 445

Glu Val Gly Ser Lys Ala Val Asp Leu Thr Lys Glu Lys Ala Ala Val
 450 455 460

Ala Ala Asp Thr Val Val Gly Tyr Thr Ala Arg Lys Lys Glu Glu Ala
 465 470 475 480

Gln His Arg Asp Gln Glu Met His Gln Gly Gly Glu Glu Lys Gln
 485 490 495

Pro Gly Phe Val Ser Gly Ala Arg Arg Asp Phe Gly Glu Glu Tyr Gly
 500 505 510

Glu Glu Arg Gly Ser Glu Lys Asp Val Tyr Gly Tyr Ala Lys Gly
 515 520 525

Ile Pro Gly Glu Gly Arg Gly Asp Val Gly Glu Ala Glu Tyr Gly Arg
 530 535 540

Gly Ser Glu Lys Asp Val Phe Gly Tyr Gly Pro Lys Gly Thr Val Glu
 545 550 555 560

Glu Ala Arg Arg Asp Val Gly Glu Glu Tyr Gly Gly Arg Gly Ser
 565 570 575

Glu Arg Tyr Val Glu Glu Glu Gly Val Gly Ala Gly Gly Val Leu Gly
 580 585 590

Ala Ile Gly Glu Thr Ile Ala Glu Ile Ala Gln Thr Thr Lys Asn Ile
 595 600 605

Val Ile Gly Asp Ala Pro Val Arg Thr His Glu His Gly Thr Thr Asp
 610 615 620

Pro Asp Tyr Met Arg Arg Glu His Gly Gln Arg
 625 630 635

<210> 39
 <211> 1461
 <212> DNA
 <213> *Arabidopsis thaliana*

<400> 39						
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gctgaccaag	acggagatgg	tgtcggtaca	agatggcg	ttctcgctgc	tggttcttct	180
ggatatggaa	actacagaca	ccaggctgac	atgtgtcacg	cataatcaa	actaagaaaa	240
ggaggtttaa	aggaagagaa	catagtcgtt	ttgatgtatg	atgatatcgc	aaaccaccca	300
cttaatcctc	gtccgggtac	tctcatcaac	catcctgacg	gtgacgatgt	ttacgcccga	360
gtccctaagg	actatactgg	tagtagtgtt	acggctgcaa	acttctacgc	tgtactccta	420
ggcgaccaga	aggctgttaa	aggtggaagc	ggtaagggtca	tcgctagcaa	gcccaacgat	480
cacatttcg	tatattatgc	ggatcatggt	ggtccggag	ttcttggat	gccaaatacg	540
cctcacatat	atgcagctga	ttttattgaa	acgcttaaga	agaagcatgc	ttccggaaaca	600
tacaaagaga	tggttatata	cgtagaagcg	tgtgaaagtg	ggagtat	cgaaggata	660
atgccaaagg	acttgaacat	ttacgtaaca	acggcttcaa	atgcacaaga	gagtagttat	720
gaaacatatt	gtcctggcat	gaatccgtca	cccccatctg	aatatatcac	ttgcttaggg	780
gatttatata	gtgttgctt	gatggaagat	agtgagactc	acaatttaaa	gaaagagacc	840
ataaaagcaac	aataccacac	ggtgaagatg	aggacatcaa	actacaatac	ctactcaggt	900
ggctctcatg	tgtatgaaata	cggtaacaat	agtattaagt	cgaggaaagct	ttatctttac	960
caagggtttg	atccagccac	cgttaatctc	ccactaaacg	aattaccggt	caagtcaaaa	1020
ataggagtcg	ttaaccaacg	cgatgcggac	cttctttcc	tttggcatat	gtatcgac	1080
tcggaagatg	ggtcaaggaa	gaaggatgac	acattgaagg	aattaactga	gacaacaagg	1140

catagggaaac	atttagatgc	aagcgtcgaa	ttgatagcca	caattttgtt	tggtccgacg	1200
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cttaaatcga	tggtacgtgt	atttgaagag	cattgtggat	cactaacgca	atatgggatg	1320
aaacatatgc	gagcgtttgc	aaacgttgt	aacaacggtg	tgtccaaaga	gctgatggag	1380
gaagcttcta	ctgcggcatg	cggtggttat	agtgaggctc	gctacacggt	gcatccatca	1440
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<210> 40

<211> 486

<212> PRT

<213> Arabidopsis thaliana

<400> 40

Met	Ala	Lys	Ser	Cys	Tyr	Phe	Arg	Pro	Ala	Leu	Leu	Leu	Leu	Leu	Val
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Leu	Leu	Val	His	Ala	Glu	Ser	Arg	Gly	Arg	Phe	Glu	Pro	Lys	Ile	Leu
													20	25	30

Met	Pro	Thr	Glu	Glu	Ala	Asn	Pro	Ala	Asp	Gln	Asp	Gly	Asp	Gly	Val
												35	40	45	

Gly	Thr	Arg	Trp	Ala	Val	Leu	Val	Ala	Gly	Ser	Ser	Gly	Tyr	Gly	Asn
												50	55	60	

Tyr	Arg	His	Gln	Ala	Asp	Met	Cys	His	Ala	Tyr	Gln	Ile	Leu	Arg	Lys
												65	70	75	80

Gly	Gly	Leu	Lys	Glu	Glu	Asn	Ile	Val	Val	Leu	Met	Tyr	Asp	Asp	Ile
												85	90	95	

Ala	Asn	His	Pro	Leu	Asn	Pro	Arg	Pro	Gly	Thr	Leu	Ile	Asn	His	Pro
												100	105	110	

Asp	Gly	Asp	Asp	Val	Tyr	Ala	Gly	Val	Pro	Lys	Asp	Tyr	Thr	Gly	Ser
												115	120	125	

Ser	Val	Thr	Ala	Ala	Asn	Phe	Tyr	Ala	Val	Leu	Leu	Gly	Asp	Gln	Lys
												130	135	140	

Ala	Val	Lys	Gly	Gly	Ser	Gly	Lys	Val	Ile	Ala	Ser	Lys	Pro	Asn	Asp
												145	150	155	160

His Ile Phe Val Tyr Tyr Ala Asp His Gly Gly Pro Gly Val Leu Gly
 165 170 175

Met Pro Asn Thr Pro His Ile Tyr Ala Ala Asp Phe Ile Glu Thr Leu
 180 185 190

Lys Lys Lys His Ala Ser Gly Thr Tyr Lys Glu Met Val Ile Tyr Val
 195 200 205

Glu Ala Cys Glu Ser Gly Ser Ile Phe Glu Gly Ile Met Pro Lys Asp
 210 215 220

Leu Asn Ile Tyr Val Thr Thr Ala Ser Asn Ala Gln Glu Ser Ser Tyr
 225 230 235 240

Gly Thr Tyr Cys Pro Gly Met Asn Pro Ser Pro Pro Ser Glu Tyr Ile
 245 250 255

Thr Cys Leu Gly Asp Leu Tyr Ser Val Ala Trp Met Glu Asp Ser Glu
 260 265 270

Thr His Asn Leu Lys Lys Glu Thr Ile Lys Gln Gln Tyr His Thr Val
 275 280 285

Lys Met Arg Thr Ser Asn Tyr Asn Thr Tyr Ser Gly Gly Ser His Val
 290 295 300

Met Glu Tyr Gly Asn Asn Ser Ile Lys Ser Glu Lys Leu Tyr Leu Tyr
 305 310 315 320

Gln Gly Phe Asp Pro Ala Thr Val Asn Leu Pro Leu Asn Glu Leu Pro
 325 330 335

Val Lys Ser Lys Ile Gly Val Val Asn Gln Arg Asp Ala Asp Leu Leu
 340 345 350

Phe Leu Trp His Met Tyr Arg Thr Ser Glu Asp Gly Ser Arg Lys Lys
 355 360 365

Asp Asp Thr Leu Lys Glu Leu Thr Glu Thr Thr Arg His Arg Lys His
 370 375 380

Leu Asp Ala Ser Val Glu Leu Ile Ala Thr Ile Leu Phe Gly Pro Thr
 385 390 395 400

Met Asn Val Leu Asn Leu Val Arg Glu Pro Gly Leu Pro Leu Val Asp
 405 410 415

Asp Trp Glu Cys Leu Lys Ser Met Val Arg Val Phe Glu Glu His Cys
 420 425 430

Gly Ser Leu Thr Gln Tyr Gly Met Lys His Met Arg Ala Phe Ala Asn
 435 440 445

Val Cys Asn Asn Gly Val Ser Lys Glu Leu Met Glu Glu Ala Ser Thr
 450 455 460

Ala Ala Cys Gly Gly Tyr Ser Glu Ala Arg Tyr Thr Val His Pro Ser
 465 470 475 480

Ile Leu Gly Tyr Ser Ala
 485

<210> 41
 <211> 1551
 <212> DNA
 <213> Arabidopsis thaliana

<400> 41		
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gtgaaattag gttaccatta cttaatctca aatcttttga ctctctgttt attccctctc	180	
gccgttgtta tctccgtcga agcctctcag atgaacccag atgatctcaa acagctctgg	240	
atccatctac aatacaatct ggttagtatac atcatctgtt cagcgattct agtcttcggg	300	
ttaacggttt atgttatgac ccgacctaga cccgtttact tggttgattt ctctgttata	360	
ctccccacccg atcatctcaa agtccttac gctcggttca tggAACATTc tagactcacc	420	
ggagatttcg atgactctgc tctcgagttt caacgcaaga tccttgagcg ttctggttta	480	
ggggaaagaca cttatgtccc tgaagctatg cattatgttc caccgagaat ttcaatggct	540	
gctgctagag aagaagctga acaagtcatg tttggtgctt tagataacct tttcgctaac	600	
actaatgtga aaccaaagga tatttggatc cttgttgtga attgtgtct cttaatcca	660	
actccttcgt tatctgcaat gattgtgaac aagtataagc ttagaggtaa cattagaagc	720	

tacaatctag	gcggtatggg	ttgcagcgcg	ggagttatcg	ctgtggatct	tgctaaagac	780
atgttgttgg	tacataggaa	cacttatgct	gttgggttt	ctactgagaa	cattactcg	840
aattggtatt	ttggtaacaa	gaaatcgatg	ttgataccga	actgcttgtt	tcgagttgg	900
ggctctgcgg	tttgctatc	gaacaagtgc	aggacaaga	gacggctaa	gtacaggctt	960
gtacatgttag	tcaggactca	ccgtggagca	gatgataaag	cttccgttg	tgttatcaa	1020
gagcaggatg	atacagggag	aaccggggtt	tcgttgcga	aagatcta	ggcgattgca	1080
ggggaaactc	tcaaaaccaa	tatcaactaca	ttgggtcctc	ttgttctacc	gataagtgag	1140
cagattctct	tcttatgac	tctagttgtg	aagaagctct	ttaacggtaa	agtgaaaccg	1200
tatatcccg	atttcaaact	tgcttcgag	catttctgta	tccatgctgg	tggaagagct	1260
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attgaagcga	agggaaaggat	gcgaagaggt	aatcgtgtt	ggcaaatcgc	gttcggaagt	1440
ggattnaat	gtaatagcgc	gatttggaa	gcattaaggc	atgtgaaacc	ttcgaacaac	1500
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<210> 42

<211> 516

<212> PRT

<213> Arabidopsis thaliana

<400> 42

Met	Asp	Gly	Ala	Gly	Glu	Ser	Arg	Leu	Gly	Gly	Asp	Gly	Gly	Asp
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Gly	Ser	Val	Gly	Val	Gln	Ile	Arg	Gln	Thr	Arg	Met	Leu	Pro	Asp	Phe
															30
			20					25							

Leu	Gln	Ser	Val	Asn	Leu	Lys	Tyr	Val	Lys	Leu	Gly	Tyr	His	Tyr	Leu
						35		40			45				

Ile	Ser	Asn	Leu	Leu	Thr	Leu	Cys	Leu	Phe	Pro	Leu	Ala	Val	Val	Ile
									50		55		60		

Ser	Val	Glu	Ala	Ser	Gln	Met	Asn	Pro	Asp	Asp	Leu	Lys	Gln	Leu	Trp
									65		70		75		80

Ile	His	Leu	Gln	Tyr	Asn	Leu	Val	Ser	Ile	Ile	Ile	Cys	Ser	Ala	Ile
									85		90		95		

Leu Val Phe Gly Leu Thr Val Tyr Val Met Thr Arg Pro Arg Pro Val
100 105 110

Tyr Leu Val Asp Phe Ser Cys Tyr Leu Pro Pro Asp His Leu Lys Ala
115 120 125

Pro Tyr Ala Arg Phe Met Glu His Ser Arg Leu Thr Gly Asp Phe Asp
130 135 140

Asp Ser Ala Leu Glu Phe Gln Arg Lys Ile Leu Glu Arg Ser Gly Leu
145 150 155 160

Gly Glu Asp Thr Tyr Val Pro Glu Ala Met His Tyr Val Pro Pro Arg
165 170 175

Ile Ser Met Ala Ala Ala Arg Glu Glu Ala Glu Gln Val Met Phe Gly
180 185 190

Ala Leu Asp Asn Leu Phe Ala Asn Thr Asn Val Lys Pro Lys Asp Ile
195 200 205

Gly Ile Leu Val Val Asn Cys Ser Leu Phe Asn Pro Thr Pro Ser Leu
210 215 220

Ser Ala Met Ile Val Asn Lys Tyr Lys Leu Arg Gly Asn Ile Arg Ser
225 230 235 240

Tyr Asn Leu Gly Gly Met Gly Cys Ser Ala Gly Val Ile Ala Val Asp
245 250 255

Leu Ala Lys Asp Met Leu Leu Val His Arg Asn Thr Tyr Ala Val Val
260 265 270

Val Ser Thr Glu Asn Ile Thr Gln Asn Trp Tyr Phe Gly Asn Lys Lys
275 280 285

Ser Met Leu Ile Pro Asn Cys Leu Phe Arg Val Gly Gly Ser Ala Val
290 295 300

Leu Leu Ser Asn Lys Ser Arg Asp Lys Arg Arg Ser Lys Tyr Arg Leu
305 310 315 320

Val His Val Val Arg Thr His Arg Gly Ala Asp Asp Lys Ala Phe Arg
325 330 335

Cys Val Tyr Gln Glu Gln Asp Asp Thr Gly Arg Thr Gly Val Ser Leu
340 345 350

Ser Lys Asp Leu Met Ala Ile Ala Gly Glu Thr Leu Lys Thr Asn Ile
355 360 365

Thr Thr Leu Gly Pro Leu Val Leu Pro Ile Ser Glu Gln Ile Leu Phe
370 375 380

Phe Met Thr Leu Val Val Lys Lys Leu Phe Asn Gly Lys Val Lys Pro
385 390 395 400

Tyr Ile Pro Asp Phe Lys Leu Ala Phe Glu His Phe Cys Ile His Ala
405 410 415

Gly Gly Arg Ala Val Ile Asp Glu Leu Glu Lys Asn Leu Gln Leu Ser
420 425 430

Pro Val His Val Glu Ala Ser Arg Met Thr Leu His Arg Phe Gly Asn
435 440 445

Thr Ser Ser Ser Ile Trp Tyr Glu Leu Ala Tyr Ile Glu Ala Lys
450 455 460

Gly Arg Met Arg Arg Gly Asn Arg Val Trp Gln Ile Ala Phe Gly Ser
465 470 475 480

Gly Phe Lys Cys Asn Ser Ala Ile Trp Glu Ala Leu Arg His Val Lys
485 490 495

Pro Ser Asn Asn Ser Pro Trp Glu Asp Cys Ile Asp Lys Tyr Pro Val
500 505 510

Thr Leu Ser Tyr
515

<210> 43
<211> 639
<212> DNA
<213> *Arabidopsis thaliana*

<400> 43

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acaatgccc	tgcatgaaa	agcagctgat	cagttaccac	caaagagcgt	cggcgacaaa	180
aaatgcac	gaggagttgc	tggagtcggt	ggattcgccg	gagttggtgg	tgttgcggc	240
gtgggagg	tcggatgcc	actcatcggt	ggtcttggcg	ggatcggtaa	gtatggtggc	300
ataggcgg	tgatcggt	cagctggaat	cggtggattt	catagtata	gcgggtttgg	360
gggtcgg	gaggtgttgg	cggtctaggc	ggtgttggag	gggggtgttgg	tggtctaggt	420
ggcgttgg	gtctaggtgg	agctggttta	ggcgggtgtag	gtgggtttgg	cgggtgttatt	480
ggtaaagcc	gtggatttgg	cggtttaggt	ggtctaggcg	gagccggagg	tggtttaggt	540
ggagttgg	gtctcggtaa	ggctgggtgt	attgggtttgg	gtgggtgttat	cggtggtggaa	600
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<210> 44

<211> 212

<212> PRT

<213> *Arabidopsis thaliana*

<400> 44

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Val	Cys	Ala	Arg	Ala	Arg	Gln	Val	Pro	Gly	Glu	Ser	Asp	Glu	Gly	Lys
							20		25				30		

Thr	Thr	Gly	His	Asp	Asp	Thr	Thr	Thr	Met	Pro	Met	His	Ala	Lys	Ala
						35		40			45				

Ala	Asp	Gln	Leu	Pro	Pro	Lys	Ser	Val	Gly	Asp	Lys	Lys	Cys	Ile	Gly
						50		55		60					

Gly	Val	Ala	Gly	Val	Gly	Gly	Phe	Ala	Gly	Val	Gly	Gly	Val	Ala	Gly
							65		70		75		80		

Val	Gly	Gly	Leu	Gly	Met	Pro	Leu	Ile	Gly	Gly	Leu	Gly	Gly	Ile	Gly
					85			90				95			

Lys	Tyr	Gly	Gly	Ile	Gly	Gly	Ala	Ala	Gly	Ile	Gly	Gly	Phe	His	Ser
							100		105			110			

Ile Gly Gly Val Gly Gly Leu Gly Gly Val Gly Gly Val Gly Gly
 115 120 125

Leu Gly Gly Val Gly Gly Val Gly Gly Leu Gly Gly Val Gly Gly
 130 135 140

Leu Gly Gly Ala Gly Leu Gly Gly Val Gly Gly Val Gly Gly Ile
 145 150 155 160

Gly Lys Ala Gly Gly Ile Gly Gly Leu Gly Gly Leu Gly Gly Ala Gly
 165 170 175

Gly Gly Leu Gly Gly Val Gly Gly Leu Gly Lys Ala Gly Gly Ile Gly
 180 185 190

Val Gly Gly Gly Ile Gly Gly His Gly Val Val Gly Gly Val Ile
 195 200 205

Asp Pro His Pro
 210

<210> 45

<211> 684

<212> DNA

<213> Arabidopsis thaliana

<400> 45

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aagagcgagt tgcttcttaa atcaaaccgg gttcacaaga agatcccggt tctgcttcat 180

gctgataaac cggtgagtga gtccaaacatc atcggttgcgtt atatcgatga cacttggagc 240

tcatctggac cgtccattct cccttccgat ctttacgatc gggccatggc tcggttctgg 300

gctgcttaca tcgacgaaaa gttgttgcgtt gctctaagag gtttcttaaa agccggagga 360

gaagaagaga agaaagctgt gatagctcaa ctagaagaag ggaatgcgtt tctggagaag 420

gcgttcattt attgcagcaa aggaaaaccg ttcttcaacg gtgacaacat cggttaccc 480

gacattgctc tcgggtgcgtt cttggcttgg ttgagagtca ccgagttgcgtt agtcagctat 540

aaaattcttg atgaggccaa gacaccttct ttgtccaaat gggctgagaa tttctgtat 600

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atctttccta agccgcaggc cttaa 684

<210> 46

<211> 227

<212> PRT

<213> Arabidopsis thaliana

<400> 46

Met	Ala	Ser	Ser	Asp	Val	Lys	Leu	Ile	Gly	Ala	Trp	Ala	Ser	Pro	Phe
1					5			10						15	

Val	Met	Arg	Pro	Arg	Ile	Ala	Leu	Asn	Leu	Lys	Ser	Val	Pro	Tyr	Glu
								20	25				30		

Phe	Leu	Gln	Glu	Thr	Phe	Gly	Ser	Lys	Ser	Glu	Leu	Leu	Leu	Lys	Ser
								35	40				45		

Asn	Pro	Val	His	Lys	Ile	Pro	Val	Leu	Leu	His	Ala	Asp	Lys	Pro
								50	55			60		

Val	Ser	Glu	Ser	Asn	Ile	Ile	Val	Glu	Tyr	Ile	Asp	Asp	Thr	Trp	Ser
							65	70		75			80		

Ser	Ser	Gly	Pro	Ser	Ile	Leu	Pro	Ser	Asp	Pro	Tyr	Asp	Arg	Ala	Met
							85		90				95		

Ala	Arg	Phe	Trp	Ala	Ala	Tyr	Ile	Asp	Glu	Lys	Trp	Phe	Val	Ala	Leu
							100		105			110			

Arg	Gly	Phe	Leu	Lys	Ala	Gly	Gly	Glu	Glu	Glu	Lys	Lys	Ala	Val	Ile
								115	120			125			

Ala	Gln	Leu	Glu	Glu	Gly	Asn	Ala	Phe	Leu	Glu	Lys	Ala	Phe	Ile	Asp
							130		135			140			

Cys	Ser	Lys	Gly	Lys	Pro	Phe	Phe	Asn	Gly	Asp	Asn	Ile	Gly	Tyr	Leu
							145	150		155			160		

Asp	Ile	Ala	Leu	Gly	Cys	Phe	Leu	Ala	Trp	Leu	Arg	Val	Thr	Glu	Leu
							165			170			175		

Ala	Val	Ser	Tyr	Lys	Ile	Leu	Asp	Glu	Ala	Lys	Thr	Pro	Ser	Leu	Ser
							180		185			190			

Lys	Trp	Ala	Glu	Asn	Phe	Cys	Asn	Asp	Pro	Ala	Val	Lys	Pro	Val	Met
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Pro Glu Thr Ala Lys Leu Ala Glu Phe Ala Lys Lys Ile Phe Pro Lys
210 215 220

Pro Gln Ala
225

<210> 47
<211> 279
<212> DNA
<213> *Arabidopsis thaliana*

<400> 47 atggcgtctc aacaagagaa gaagcagctg gatgagaggg caaagaaggg cgagaccgtc 60
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agccgaggag ggccaaactcg aaaggagcag ttaggaactg aaggatatca gcagatggga 180
cgcaaagggtg gtcttagcac cggagacaaag cctgggtgggg aacacgctga ggaggaagga 240
gtcgagatag acgaatccaa attcaggacc aagacctaa 279

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<210> 48
<211> 92
<212> PRT
<213> Arabidopsis thaliana
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<400> 48
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Gln Gln His Leu Ala Glu Gly Arg Ser Arg Gly Gly Gln Thr Arg Lys
35 40 45

Glu Gln Leu Gly Thr Glu Gly Tyr Gln Gln Met Gly Arg Lys Gly Gly
50 55 60

Leu Ser Thr Gly Asp Lys Pro Gly Gly Glu His Ala Glu Glu Glu Gly
65 70 75 80

Val Glu Ile Asp Glu Ser Lys Phe Arg Thr Lys Thr
85 90

<210> 49
<211> 32

<212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 49
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<210> 50
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 50
 gcttaataaa cttccgcag cttcaggcc gc 32

<210> 51
 <211> 1131
 <212> DNA
 <213> *Arabidopsis thaliana*

<400> 51
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 accgatgaag aagtggatgc catctactta caatggtccg cagaacacgg gaaaactaac 180
 aacaacaaca acggtatcat caacgaccaa gacaaaagat tcaatatttt caaagacaac 240
 ttaagattca tcgatctaca caacgaaaac aacaagaacg ctacttacaa gcttggtctc 300
 accaaattta ccgatctcac taacgatgag taccgcaagt tgtacctcgg ggcaagaact 360
 gagccccc gccgcacgc taaggccaag aatgtcaacc agaaatactc agccgctgt 420
 aacggcaagg aggttccaga gacgggttgat tggagacaga aaggagccgt taacccatc 480
 aaagaccaag gaacttgcgg aagttttgg gcgtttcga ctactgcac agtagaaggt 540
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 gacaaatcct acaatcaagg ttgcaacggc ggtttatgg actacgcttt tcaattcatc 660
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 tgcaatttt tcttgaagaa ttcttaggtt gtgagtattt atgggtacga agatgttcct 780
 actaaagacg agactgcgtt gaagaaagct attcataacc aaccggtag tggtagctatt 840
 gaagccgggtg gaagaatttt tcaacattac caatcggta ttttaccgg aagttgtgg 900

acaaatcttg atcacgcggt agttgctgtc gggtaacggat cagagaacgg tggtaactac	960
tggattgtaa ggaactcttg gggtaacgt tgggtgagg aaggtaat tagaatggag	1020
agaaaacttgg cagcctccaa atccggtaag tggggattg cggttgaagc ctcgtacccg	1080
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<210> 52
 <211> 376
 <212> PRT
 <213> *Arabidopsis thaliana*

<400> 52
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 20 25 30

Leu Pro Ser Asp Gly Lys Trp Arg Thr Asp Glu Glu Val Arg Ser Ile
 35 40 45

Tyr Leu Gln Trp Ser Ala Glu His Gly Lys Thr Asn Asn Asn Asn
 50 55 60

Gly Ile Ile Asn Asp Gln Asp Lys Arg Phe Asn Ile Phe Lys Asp Asn
 65 70 75 80

Leu Arg Phe Ile Asp Leu His Asn Glu Asn Asn Lys Asn Ala Thr Tyr
 85 90 95

Lys Leu Gly Leu Thr Lys Phe Thr Asp Leu Thr Asn Asp Glu Tyr Arg
 100 105 110

Lys Leu Tyr Leu Gly Ala Arg Thr Glu Pro Ala Arg Arg Ile Ala Lys
 115 120 125

Ala Lys Asn Val Asn Gln Lys Tyr Ser Ala Ala Val Asn Gly Lys Glu
 130 135 140

Val Pro Glu Thr Val Asp Trp Arg Gln Lys Gly Ala Val Asn Pro Ile
 145 150 155 160

Lys Asp Gln Gly Thr Cys Gly Ser Cys Trp Ala Phe Ser Thr Thr Ala
 165 170 175

Ala Val Glu Gly Ile Asn Lys Ile Val Thr Gly Glu Leu Ile Ser Leu
 180 185 190

Ser Glu Gln Glu Leu Val Asp Cys Asp Lys Ser Tyr Asn Gln Gly Cys
 195 200 205

Asn Gly Gly Leu Met Asp Tyr Ala Phe Gln Phe Ile Met Lys Asn Gly
 210 215 220

Gly Leu Asn Thr Glu Lys Asp Tyr Pro Tyr Arg Gly Phe Gly Lys
 225 230 235 240

Cys Asn Ser Phe Leu Lys Asn Ser Arg Val Val Ser Ile Asp Gly Tyr
 245 250 255

Glu Asp Val Pro Thr Lys Asp Glu Thr Ala Leu Lys Lys Ala Ile Ser
 260 265 270

Tyr Gln Pro Val Ser Val Ala Ile Glu Ala Gly Gly Arg Ile Phe Gln
 275 280 285

His Tyr Gln Ser Gly Ile Phe Thr Gly Ser Cys Gly Thr Asn Leu Asp
 290 295 300

His Ala Val Val Ala Val Gly Tyr Gly Ser Glu Asn Gly Val Asp Tyr
 305 310 315 320

Trp Ile Val Arg Asn Ser Trp Gly Pro Arg Trp Gly Glu Glu Gly Tyr
 325 330 335

Ile Arg Met Glu Arg Asn Leu Ala Ala Ser Lys Ser Gly Lys Cys Gly
 340 345 350

Ile Ala Val Glu Ala Ser Tyr Pro Val Lys Tyr Ser Pro Asn Pro Val
 355 360 365

Arg Gly Asn Thr Ile Ser Ser Val
 370 375

<210> 53

<211> 1653

<212> DNA

<213> *Arabidopsis thaliana*

<210> 54
 <211> 550
 <212> PRT

<213> *Arabidopsis thaliana*

<400> 54

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Leu Ser Val Thr Gly Ala Leu Ala Asp Pro Tyr Val Phe Phe Asp
 20 25 30

Trp Thr Val Ser Tyr Leu Ser Ala Ser Pro Leu Gly Thr Arg Gln Gln
 35 40 45

Val Ile Gly Ile Asn Gly Gln Phe Pro Gly Pro Ile Leu Asn Val Thr
 50 55 60

Thr Asn Trp Asn Val Val Met Asn Val Lys Asn Asn Leu Asp Glu Pro
 65 70 75 80

Leu Leu Leu Thr Trp Asn Gly Ile Gln His Arg Lys Asn Ser Trp Gln
 85 90 95

Asp Gly Val Leu Gly Thr Asn Cys Pro Ile Pro Ser Gly Trp Asn Trp
 100 105 110

Thr Tyr Glu Phe Gln Val Lys Asp Gln Ile Gly Ser Phe Phe Tyr Phe
 115 120 125

Pro Ser Thr Asn Phe Gln Arg Ala Ser Gly Gly Tyr Gly Ile Ile
 130 135 140

Val Asn Asn Arg Ala Ile Ile Pro Val Pro Phe Ala Leu Pro Asp Gly
 145 150 155 160

Asp Val Thr Leu Phe Ile Ser Asp Trp Tyr Thr Lys Ser His Lys Lys
 165 170 175

Leu Arg Lys Asp Val Glu Ser Lys Asn Gly Leu Arg Pro Pro Asp Gly
 180 185 190

Ile Val Ile Asn Gly Phe Gly Pro Phe Ala Ser Asn Gly Ser Pro Phe
 195 200 205

Gly Thr Ile Asn Val Glu Pro Gly Arg Thr Tyr Arg Phe Arg Val His
210 215 220

Asn Ser Gly Ile Ala Thr Ser Leu Asn Phe Arg Ile Gln Asn His Asn
225 230 235 240

Leu Leu Leu Val Glu Thr Glu Gly Ser Tyr Thr Ile Gln Gln Asn Tyr
245 250 255

Thr Asn Met Asp Ile His Val Gly Gln Ser Phe Ser Phe Leu Val Thr
260 265 270

Met Asp Gln Ser Gly Ser Asn Asp Tyr Tyr Ile Val Ala Ser Pro Arg
275 280 285

Phe Ala Thr Ser Ile Lys Ala Ser Gly Val Ala Val Leu Arg Tyr Ser
290 295 300

Asn Ser Gln Gly Pro Ala Ser Gly Pro Leu Pro Asp Pro Pro Ile Glu
305 310 315 320

Leu Asp Thr Phe Phe Ser Met Asn Gln Ala Arg Ser Leu Arg Leu Asn
325 330 335

Leu Ser Ser Gly Ala Ala Arg Pro Asn Pro Gln Gly Ser Phe Lys Tyr
340 345 350

Gly Gln Ile Thr Val Thr Asp Val Tyr Val Ile Val Asn Arg Pro Pro
355 360 365

Glu Met Ile Glu Gly Arg Leu Arg Ala Thr Leu Asn Gly Ile Ser Tyr
370 375 380

Leu Pro Pro Ala Thr Pro Leu Lys Leu Ala Gln Gln Tyr Asn Ile Ser
385 390 395 400

Gly Val Tyr Lys Leu Asp Phe Pro Lys Arg Pro Met Asn Arg His Pro
405 410 415

Arg Val Asp Thr Ser Val Ile Asn Gly Thr Phe Lys Gly Phe Val Glu
420 425 430

Ile Ile Phe Gln Asn Ser Asp Thr Thr Val Lys Ser Tyr His Leu Asp
435 440 445

Gly Tyr Ala Phe Phe Val Val Gly Met Asp Phe Gly Leu Trp Thr Glu
 450 455 460

Asn Ser Arg Ser Thr Tyr Asn Lys Gly Asp Ala Val Ala Arg Ser Thr
 465 470 475 480

Thr Gln Val Phe Pro Gly Ala Trp Thr Ala Val Leu Val Ser Leu Asp
 485 490 495

Asn Ala Gly Met Trp Asn Leu Arg Ile Asp Asn Leu Ala Ser Trp Tyr
 500 505 510

Leu Gly Gln Glu Leu Tyr Leu Ser Val Val Asn Pro Glu Ile Asp Ile
 515 520 525

Asp Ser Ser Glu Asn Ser Val Pro Lys Asn Ser Ile Tyr Cys Gly Arg
 530 535 540

Leu Ser Pro Leu Gln Lys
 545 550

<210> 55
 <211> 615
 <212> DNA
 <213> Arabidopsis thaliana

<400> 55
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 tacaacatcg ataattcctca cgaaggtaa gctttaccac aaactcacaa aatttccgtc 180
 aaggtgacgt ctaattccgg taacaattac catcacgcgg aacaagttaga ttcaggacaa 240
 ttcgcattct cggctgttga agcaggtgat tacatggctt gtttcaactgc tgttgatcat 300
 aagcctgagg tttcgtttag tattgacttt gagtggaga ctgggtttca atctaaaagc 360
 tgggctaatg ttgctaagaa gagtcaagtc gaagttatgg aatttgaagt aaagagtctt 420
 cttgatactg ttaactcgat tcatgaagag atgtattatc ttagagatag ggaagaagag 480
 atgcaagact tgaaccggtc cactaacaca aaaatggcgt ggttgagtgt tctctcggtt 540
 ttcgtctgca taggagttgc agggatgcag tttttgcact tgaagacgtt tttcgagaag 600
 aagaaggtta tctga 615

<210> 56

<211> 204

<212> PRT

<213> Arabidopsis thaliana

<400> 56

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20 25 30Ser Asn Ser Met Thr Val Gly Lys Tyr Asn Ile Asp Asn Pro His Glu
35 40 45Gly Gln Ala Leu Pro Gln Thr His Lys Ile Ser Val Lys Val Thr Ser
50 55 60Asn Ser Gly Asn Asn Tyr His His Ala Glu Gln Val Asp Ser Gly Gln
65 70 75 80Phe Ala Phe Ser Ala Val Glu Ala Gly Asp Tyr Met Ala Cys Phe Thr
85 90 95Ala Val Asp His Lys Pro Glu Val Ser Leu Ser Ile Asp Phe Glu Trp
100 105 110Lys Thr Gly Val Gln Ser Lys Ser Trp Ala Asn Val Ala Lys Lys Ser
115 120 125Gln Val Glu Val Met Glu Phe Glu Val Lys Ser Leu Leu Asp Thr Val
130 135 140Asn Ser Ile His Glu Glu Met Tyr Tyr Leu Arg Asp Arg Glu Glu Glu
145 150 155 160Met Gln Asp Leu Asn Arg Ser Thr Asn Thr Lys Met Ala Trp Leu Ser
165 170 175Val Leu Ser Phe Phe Val Cys Ile Gly Val Ala Gly Met Gln Phe Leu
180 185 190His Leu Lys Thr Phe Phe Glu Lys Lys Lys Val Ile
195 200

<210> 57
 <211> 969
 <212> DNA
 <213> Arabidopsis thaliana

<400> 57
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 ggccacaaaa tcccagccgt tggactcggc acgtggcgat ctgggtctca agccgcccac 120
 gccgttgtca ctgcaatcgt cgagggtggc tataggcaca tagatacagc ttgggagtt 180
 ggtgatcaga gagaggtcgg tcaaggaata aagagggcga tgcacgctgg cttgaaagg 240
 agggacctct ttgtgacctc gaagcttgg tgcactgagt tatctcctga gagagtgcgt 300
 cctgctctgc aaaacaccct taaagagctt caatttagagt accttgatct ctacttgatt 360
 cactggccta tccggctaag agaaggagcc agtaagccac caaaggcagg ggacgttctt 420
 gactttgaca tggaggagt ttggagagaa atggagaatc tttccaagga cagtctcgtc 480
 aggaatatcg gtgtctgtaa ctttacagtc actaagctca ataagctgct aggatttgct 540
 gaactgatcc ctgccgtttg ccagatggaa atgcattctg gttggagaaa cgataggata 600
 ctcgaattct gcaagaagaa tgagatccat gttactgcct attctccatt gggatctcaa 660
 gaaggcggga gagatctgat acacgatcag acgggtggata ggatagcgaa gaagctgaat 720
 aagacacccgg gacagattct agtcaaattgg gtttgcaga gaggaacaag tgtcatccct 780
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 gaacaagact tccaagctct caacagcatc actgaccaga aacgagtgat agacggtgag 900
 gatctttcg tcaacaagac cgaagggtcca ttccgtagtg tggctgatct atgggaccat 960
 gaagactaa 969

<210> 58
 <211> 322
 <212> PRT
 <213> Arabidopsis thaliana

<400> 58
 Met Ala His Ala Thr Phe Thr Ser Glu Gly Gln Asn Met Glu Ser Phe
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Arg Leu Leu Ser Gly His Lys Ile Pro Ala Val Gly Leu Gly Thr Trp
 20 25 30

Arg Ser Gly Ser Gln Ala Ala His Ala Val Val Thr Ala Ile Val Glu
 35 40 45

Gly Gly Tyr Arg His Ile Asp Thr Ala Trp Glu Tyr Gly Asp Gln Arg
 50 55 60

Glu Val Gly Gln Gly Ile Lys Arg Ala Met His Ala Gly Leu Glu Arg
 65 70 75 80

Arg Asp Leu Phe Val Thr Ser Lys Leu Trp Cys Thr Glu Leu Ser Pro
 85 90 95

Glu Arg Val Arg Pro Ala Leu Gln Asn Thr Leu Lys Glu Leu Gln Leu
 100 105 110

Glu Tyr Leu Asp Leu Tyr Leu Ile His Trp Pro Ile Arg Leu Arg Glu
 115 120 125

Gly Ala Ser Lys Pro Pro Lys Ala Gly Asp Val Leu Asp Phe Asp Met
 130 135 140

Glu Gly Val Trp Arg Glu Met Glu Asn Leu Ser Lys Asp Ser Leu Val
 145 150 155 160

Arg Asn Ile Gly Val Cys Asn Phe Thr Val Thr Lys Leu Asn Lys Leu
 165 170 175

Leu Gly Phe Ala Glu Leu Ile Pro Ala Val Cys Gln Met Glu Met His
 180 185 190

Pro Gly Trp Arg Asn Asp Arg Ile Leu Glu Phe Cys Lys Lys Asn Glu
 195 200 205

Ile His Val Thr Ala Tyr Ser Pro Leu Gly Ser Gln Glu Gly Arg
 210 215 220

Asp Leu Ile His Asp Gln Thr Val Asp Arg Ile Ala Lys Lys Leu Asn
 225 230 235 240

Lys Thr Pro Gly Gln Ile Leu Val Lys Trp Gly Leu Gln Arg Gly Thr
 245 250 255

Ser Val Ile Pro Lys Ser Leu Asn Pro Glu Arg Ile Lys Glu Asn Ile
 260 265 270

Lys Val Phe Asp Trp Val Ile Pro Glu Gln Asp Phe Gln Ala Leu Asn
 275 280 285

Ser Ile Thr Asp Gln Lys Arg Val Ile Asp Gly Glu Asp Leu Phe Val
 290 295 300

Asn Lys Thr Glu Gly Pro Phe Arg Ser Val Ala Asp Leu Trp Asp His
 305 310 315 320

Glu Asp

<210> 59
 <211> 867
 <212> DNA
 <213> *Arabidopsis thaliana*

<400> 59
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 ttgataactg gtggagactc tgggattggc cgagccgtgg gatactgttt tgcattccgaa 180
 ggagctactg tggctttcac ttacgtgaag ggtcaagaag aaaaagatgc acaagagacc 240
 ctacaaatgt tgaaggaggt caaaacctcg gactccaagg aacctatcgc cattccaacg 300
 gattnaggat ttgacgaaaa ctgcaaaagg gtcgttgatg aggtcgtaa tgctttggc 360
 cgcattcgatg ttttgcataa taacgcagca gagcagtacg agagcagcac aatcgaagag 420
 attgatgagc ctaggcttga gcgagtcttc cgtacaaaca tctttctta cttttctc 480
 acaaggcatg cgttgaagca tatgaaggaa ggaaggcagca ttatcaacac cacttcggtg 540
 aatgcctaca agggaaacgc ttcacttctc gactacacccg ctacaaaagg agcgattgtg 600
 gcgtttactc gaggacttgc acttcagcta gctgagaaag gaatccgtgt caatgggtgt 660
 gctcctggtc caatatggac accccttatac ccagcatcat tcaatgagga gaagattaag 720
 aattttgggt ctgaggttcc gatgaaaaga gcggttcagc caattgaagt ggcaccatcc 780
 tatgtttct tggcgtgtaa ccactgctct tcttacttca ctggcgtcaagt tcttcaccct 840
 aatggaggag ctgtggtaaa tgcgtaa 867

<210> 60
 <211> 288
 <212> PRT
 <213> *Arabidopsis thaliana*

<400> 60

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Val	Met	Glu	Ser	Ser	Pro	Gln	Phe	Ser	Ser	Ser	Asp	Tyr	Gln	Pro	Ser
	20				25						30				

Asn	Lys	Leu	Arg	Gly	Lys	Val	Ala	Leu	Ile	Thr	Gly	Gly	Asp	Ser	Gly
	35				40					45					

Ile	Gly	Arg	Ala	Val	Gly	Tyr	Cys	Phe	Ala	Ser	Glu	Gly	Ala	Thr	Val
	50				55					60					

Ala	Phe	Thr	Tyr	Val	Lys	Gly	Gln	Glu	Lys	Asp	Ala	Gln	Glu	Thr	
65				70				75		80					

Leu	Gln	Met	Leu	Lys	Glu	Val	Lys	Thr	Ser	Asp	Ser	Lys	Glu	Pro	Ile
		85					90			95					

Ala	Ile	Pro	Thr	Asp	Leu	Gly	Phe	Asp	Glu	Asn	Cys	Lys	Arg	Val	Val
		100					105			110					

Asp	Glu	Val	Val	Asn	Ala	Phe	Gly	Arg	Ile	Asp	Val	Leu	Ile	Asn	Asn
	115				120				125						

Ala	Ala	Glu	Gln	Tyr	Glu	Ser	Ser	Thr	Ile	Glu	Glu	Ile	Asp	Glu	Pro
	130				135				140						

Arg	Leu	Glu	Arg	Val	Phe	Arg	Thr	Asn	Ile	Phe	Ser	Tyr	Phe	Phe	Leu
145				150				155				160			

Thr	Arg	His	Ala	Leu	Lys	His	Met	Lys	Glu	Gly	Ser	Ser	Ile	Ile	Asn
				165				170				175			

Thr	Thr	Ser	Val	Asn	Ala	Tyr	Lys	Gly	Asn	Ala	Ser	Leu	Leu	Asp	Tyr
			180				185			190					

Thr	Ala	Thr	Lys	Gly	Ala	Ile	Val	Ala	Phe	Thr	Arg	Gly	Leu	Ala	Leu
			195			200				205					

Gln	Leu	Ala	Glu	Lys	Gly	Ile	Arg	Val	Asn	Gly	Val	Ala	Pro	Gly	Pro
	210				215				220						

Ile Trp Thr Pro Leu Ile Pro Ala Ser Phe Asn Glu Glu Lys Ile Lys
 225 230 235 240

Asn Phe Gly Ser Glu Val Pro Met Lys Arg Ala Gly Gln Pro Ile Glu
 245 250 255

Val Ala Pro Ser Tyr Val Phe Leu Ala Cys Asn His Cys Ser Ser Tyr
 260 265 270

Phe Thr Gly Gln Val Leu His Pro Asn Gly Gly Ala Val Val Asn Ala
 275 280 285

<210> 61

<211> 1326

<212> DNA

<213> *Arabidopsis thaliana*

<400> 61

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aagataaccta ctgggtgtcca tgaagaagac aaagacacta agccgaggag ttctcgtagtg	180
gaagagagtg atgatgatat ggatgaaact gaagaagtaa aaccgaaagt ggaggaagaa	240
gaagaagagg atgagattgt tgaatctgat gttagagctt aaggagacac tggtagcct	300
gataatgatc ctcctcagaa gatggggat tcatcagtgg aggtgactga tgagaatcgt	360
gaagctgctc aagaagctaa gggcaaagcc atggaggccc tttctgaagg aaactttgat	420
gaagcaattt agcatttaac tcgggcaata acgttgaacc cgacttcagc tattatgtat	480
ggaaacagag ctagtgtcta cattaagttt aagaagccaa acgctgctat tcgagatgca	540
aacgcagcat tggagattaa ccctgattct gccaaggat acaagtcacg aggtatggct	600
cgtgccatgc ttggagaatg ggcagaggct gcaaaagacc ttcacccgc atctacgata	660
gactatgatg agggaaatttt tgctgttctc aaaaaggatgg aacctaattgc acataagctt	720
gaggagcacc gtagaaaagta tgacagatta cgtaaaggaaa gagaggacaa aaaggctgaa	780
cgggatagat tacgtcgccg tgctgaagca caggctgcct atgataaagc taagaaagaa	840
gaacagtcat catctagcag accatcagga ggcggtttcc caggaggtat gcccgggttgt	900
ttcccccaggat gtagccccgg tggattccca ggaggaatgg gaggcatgcc cggcggattc	960
ccggggaggaa tgggtggat gggcggtat cccgggtggat tcccccaggagg aatgggcgggt	1020
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atgggtggtg	gcggtatgcc	aggcagggc	ggtggtatgc	ctgggtgggg	cggtatgcct	1140
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cctgaagtca	tggctgctct	tcaagatgtg	atgaagaacc	ctgcgaatct	agcgaagcat	1260
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cagtaa						1326

<210> 62

<211> 441

<212> PRT

<213> *Arabidopsis thaliana*

<400> 62

Met	Asp	Ser	Thr	Lys	Leu	Ser	Glu	Leu	Lys	Val	Phe	Ile	Asp	Gln	Cys
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				20				25					30		

Asp	Tyr	Leu	Glu	Ser	Leu	Gly	Ala	Lys	Ile	Pro	Thr	Gly	Val	His	Glu
				35				40				45			

Glu	Asp	Lys	Asp	Thr	Lys	Pro	Arg	Ser	Phe	Val	Val	Glu	Glu	Ser	Asp
					50			55			60				

Asp	Asp	Met	Asp	Glu	Thr	Glu	Glu	Val	Lys	Pro	Lys	Val	Glu	Glu	
				65			70		75			80			

Glu	Glu	Glu	Asp	Glu	Ile	Val	Glu	Ser	Asp	Val	Glu	Leu	Glu	Gly	Asp
					85			90			95				

Thr	Val	Glu	Pro	Asp	Asn	Asp	Pro	Pro	Gln	Lys	Met	Gly	Asp	Ser	Ser
				100				105			110				

Val	Glu	Val	Thr	Asp	Glu	Asn	Arg	Glu	Ala	Ala	Gln	Glu	Ala	Lys	Gly
					115			120			125				

Lys	Ala	Met	Glu	Ala	Leu	Ser	Glu	Gly	Asn	Phe	Asp	Glu	Ala	Ile	Glu
					130			135			140				

His	Leu	Thr	Arg	Ala	Ile	Thr	Leu	Asn	Pro	Thr	Ser	Ala	Ile	Met	Tyr
					145			150			155			160	

Gly Asn Arg Ala Ser Val Tyr Ile Lys Leu Lys Lys Pro Asn Ala Ala
 165 170 175

Ile Arg Asp Ala Asn Ala Ala Leu Glu Ile Asn Pro Asp Ser Ala Lys
 180 185 190

Gly Tyr Lys Ser Arg Gly Met Ala Arg Ala Met Leu Gly Glu Trp Ala
 195 200 205

Glu Ala Ala Lys Asp Leu His Leu Ala Ser Thr Ile Asp Tyr Asp Glu
 210 215 220

Glu Ile Ser Ala Val Leu Lys Lys Val Glu Pro Asn Ala His Lys Leu
 225 230 235 240

Glu Glu His Arg Arg Lys Tyr Asp Arg Leu Arg Lys Glu Arg Glu Asp
 245 250 255

Lys Lys Ala Glu Arg Asp Arg Leu Arg Arg Arg Ala Glu Ala Gln Ala
 260 265 270

Ala Tyr Asp Lys Ala Lys Lys Glu Glu Gln Ser Ser Ser Ser Arg Pro
 275 280 285

Ser Gly Gly Gly Phe Pro Gly Gly Met Pro Gly Gly Phe Pro Gly Gly
 290 295 300

Met Pro Gly Gly Phe Pro Gly Gly Met Gly Gly Met Pro Gly Gly Phe
 305 310 315 320

Pro Gly Gly Met Gly Gly Met Gly Gly Met Pro Gly Gly Phe Pro Gly
 325 330 335

Gly Met Gly Gly Gly Met Pro Ala Gly Met Gly Gly Met Pro Gly
 340 345 350

Met Gly Gly Gly Met Pro Ala Gly Met Gly Gly Met Pro Gly
 355 360 365

Ala Gly Gly Gly Met Pro Gly Gly Gly Met Pro Gly Gly Met Asp
 370 375 380

Phe Ser Lys Ile Leu Asn Asp Pro Glu Leu Met Thr Ala Phe Ser Asp
 385 390 395 400

Pro Glu Val Met Ala Ala Leu Gln Asp Val Met Lys Asn Pro Ala Asn
 405 410 415

Leu Ala Lys His Gln Ala Asn Pro Lys Val Ala Pro Val Ile Ala Lys
 420 425 430

Met Met Gly Lys Phe Ala Gly Pro Gln
 435 440

<210> 63
 <211> 2448
 <212> DNA
 <213> *Arabidopsis thaliana*

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gcaaaggctg aaaacgatga cggacgttct gtcaacggcg ccggagatgc tgcttcagag	180
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ctcgaaatca acggccaaga ttgttctgct ccagaagaga cttgcttagc tcaatgtcaa	300
gatttgctgt tctatggggc attagctaaa tgtcctttat gcggaggaac tttaatttgc	360
gacaatgaaa agagatttgc atgtggaggt gagataagtg agtggtcag ttgcgtgttt	420
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tctgctatat ctgacttgat caagaaacac caggacccta aaagccgacc taaaagagag	540
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agaacacatc aatattggaa gaaaaagatc gagagaaaacg gtggaaaagt ctccaataact	660
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aagatggtagg aggcaatgga acaaggtcta cgggtgtga gcgaagcatg gttgatcgac	780
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gtggaaaggaa aaggaattcc atggataag caagatccta gtgaggaggc aattgaatcc	900
ttttctgctg agctcaaaat gtatggaaa agaggagtgt acatggacac aaaacttcag	960
gagagaggag gaaagatctt cgagaaagat ggactcttgt ataactgtgc cttctcgata	1020
tgcgatttgg gaaaaggcg taatgagtat tgtattatgc agctagtcac ggtacccgat	1080
agtaacctga acatgtactt caagagaggg aaagtaggag atgaccctaa tgccgaagag	1140

aggctcgagg aatgggagga cgaagaagct gcgatcaaag agtttcaag gcttttgag	1200
gagatagcag ggaatgagtt tgagccatgg gaacgtgaga agaagattca aaagaagcct	1260
cataagttt tcccaattga tatggatgat ggaatcgaag taaggagtgg ggctttgggt	1320
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<210> 64

<211> 815

<212> PRT

<213> *Arabidopsis thaliana*

<400> 64

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Gln Lys Lys Gly Asn Leu Arg Lys His Lys Ala Glu Gly Lys Leu Pro
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Glu Ser Glu Gln Ser Gln Lys Lys Ala Lys Pro Glu Asn Asp Asp Gly
 35 40 45

Arg Ser Val Asn Gly Ala Gly Asp Ala Ala Ser Glu Tyr Asn Glu Phe
 50 55 60

Cys Lys Ala Val Glu Glu Asn Leu Ser Ile Asp Gln Ile Lys Glu Val
 65 70 75 80

Leu Glu Ile Asn Gly Gln Asp Cys Ser Ala Pro Glu Glu Thr Leu Leu
 85 90 95

Ala Gln Cys Gln Asp Leu Leu Phe Tyr Gly Ala Leu Ala Lys Cys Pro
 100 105 110

Leu Cys Gly Gly Thr Leu Ile Cys Asp Asn Glu Lys Arg Phe Val Cys
 115 120 125

Gly Gly Glu Ile Ser Glu Trp Cys Ser Cys Val Phe Ser Thr Lys Asp
 130 135 140

Pro Pro Arg Lys Glu Glu Pro Val Lys Ile Pro Asp Ser Val Met Asn
 145 150 155 160

Ser Ala Ile Ser Asp Leu Ile Lys Lys His Gln Asp Pro Lys Ser Arg
 165 170 175

Pro Lys Arg Glu Leu Gly Ser Ala Asp Lys Pro Phe Val Gly Met Met
 180 185 190

Ile Ser Leu Met Gly Arg Leu Thr Arg Thr His Gln Tyr Trp Lys Lys
 195 200 205

Lys Ile Glu Arg Asn Gly Gly Lys Val Ser Asn Thr Val Gln Gly Val
 210 215 220

Thr Cys Leu Val Val Ser Pro Ala Glu Arg Glu Arg Gly Gly Thr Ser
 225 230 235 240

Lys Met Val Glu Ala Met Glu Gln Gly Leu Pro Val Val Ser Glu Ala
 245 250 255

Trp Leu Ile Asp Ser Val Glu Lys His Glu Ala Gln Pro Leu Glu Ala
260 265 270

Tyr Asp Val Val Ser Asp Leu Ser Val Glu Gly Lys Gly Ile Pro Trp
275 280 285

Asp Lys Gln Asp Pro Ser Glu Glu Ala Ile Glu Ser Phe Ser Ala Glu
290 295 300

Leu Lys Met Tyr Gly Lys Arg Gly Val Tyr Met Asp Thr Lys Leu Gln
305 310 315 320

Glu Arg Gly Gly Lys Ile Phe Glu Lys Asp Gly Leu Leu Tyr Asn Cys
325 330 335

Ala Phe Ser Ile Cys Asp Leu Gly Lys Gly Arg Asn Glu Tyr Cys Ile
340 345 350

Met Gln Leu Val Thr Val Pro Asp Ser Asn Leu Asn Met Tyr Phe Lys
355 360 365

Arg Gly Lys Val Gly Asp Asp Pro Asn Ala Glu Glu Arg Leu Glu Glu
370 375 380

Trp Glu Asp Glu Glu Ala Ala Ile Lys Glu Phe Ala Arg Leu Phe Glu
385 390 395 400

Glu Ile Ala Gly Asn Glu Phe Glu Pro Trp Glu Arg Glu Lys Lys Ile
405 410 415

Gln Lys Lys Pro His Lys Phe Phe Pro Ile Asp Met Asp Asp Gly Ile
420 425 430

Glu Val Arg Ser Gly Ala Leu Gly Leu Arg Gln Leu Gly Ile Ala Ser
435 440 445

Ala His Cys Lys Leu Asp Ser Phe Val Ala Asn Phe Ile Lys Val Leu
450 455 460

Cys Gly Gln Glu Ile Tyr Asn Tyr Ala Leu Met Glu Leu Gly Leu Asp
465 470 475 480

Pro Pro Asp Leu Pro Met Gly Met Leu Thr Asp Ile His Leu Lys Arg
485 490 495

Cys Glu Glu Val Leu Leu Glu Phe Val Glu Lys Val Lys Thr Thr Lys
 500 505 510

Glu Thr Gly Gln Lys Ala Glu Ala Met Trp Ala Asp Phe Ser Ser Arg
 515 520 525

Trp Phe Ser Leu Met His Ser Thr Arg Pro Met Arg Leu His Asp Val
 530 535 540

Asn Glu Leu Ala Asp His Ala Ala Ser Ala Phe Glu Thr Val Arg Asp
 545 550 555 560

Ile Asn Thr Ala Ser Arg Leu Ile Gly Asp Met Arg Gly Asp Thr Leu
 565 570 575

Asp Asp Pro Leu Ser Asp Arg Tyr Lys Lys Leu Gly Cys Lys Ile Ser
 580 585 590

Val Val Asp Lys Glu Ser Glu Asp Tyr Lys Met Val Val Lys Tyr Leu
 595 600 605

Glu Thr Thr Tyr Glu Pro Val Lys Val Ser Asp Val Glu Tyr Gly Val
 610 615 620

Ser Val Gln Asn Val Phe Ala Val Glu Ser Asp Ala Ile Pro Ser Leu
 625 630 635 640

Asp Asp Ile Lys Lys Leu Pro Asn Lys Val Leu Leu Trp Cys Gly Ser
 645 650 655

Arg Ser Ser Asn Leu Leu Arg His Ile Tyr Lys Gly Phe Leu Pro Ala
 660 665 670

Val Cys Ser Leu Pro Val Pro Gly Tyr Met Phe Gly Arg Ala Ile Val
 675 680 685

Cys Ser Asp Ala Ala Ala Glu Ala Ala Arg Tyr Gly Phe Thr Ala Val
 690 695 700

Asp Arg Pro Glu Gly Phe Leu Val Leu Ala Val Ala Ser Leu Gly Glu
 705 710 715 720

Glu Val Thr Glu Phe Thr Ser Pro Pro Glu Asp Thr Lys Thr Leu Glu
 725 730 735

Asp Lys Lys Ile Gly Val Lys Gly Leu Gly Arg Lys Lys Thr Glu Glu
 740 745 750

Ser Glu His Phe Met Trp Arg Asp Asp Ile Lys Val Pro Cys Gly Arg
 755 760 765

Leu Val Pro Ser Glu His Lys Asp Ser Pro Leu Glu Tyr Asn Glu Tyr
 770 775 780

Ala Val Tyr Asp Pro Lys Gln Thr Ser Ile Arg Phe Leu Val Glu Val
 785 790 795 800

Lys Tyr Glu Glu Lys Gly Thr Glu Ile Val Asp Val Glu Pro Glu
 805 810 815

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<211> 2430

<212> DNA

<213> Arabidopsis thaliana

<400> 65

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<210> 66

<211> 809

<212> PRT

<213> Arabidopsis thaliana

<400> 66

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							20	25					30		

Asp	Glu	Ala	Ile	Asn	Asp	Asp	Asn	Ser	Val	Val	Ser	Leu	His	Pro	Ala
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Thr	Met	Glu	Lys	Leu	Gln	Leu	Phe	Arg	Gly	Asp	Thr	Ile	Leu	Ile	Lys
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Gly	Lys	Lys	Arg	Lys	Asp	Thr	Val	Cys	Ile	Ala	Leu	Ala	Asp	Glu	Thr
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Cys	Glu	Glu	Pro	Lys	Ile	Arg	Met	Asn	Lys	Val	Val	Arg	Ser	Asn	Leu
							85	90				95			

Arg	Val	Arg	Leu	Gly	Asp	Val	Ile	Ser	Val	His	Gln	Cys	Pro	Asp	Val
							100	105			110				

Lys	Tyr	Gly	Lys	Arg	Val	His	Ile	Leu	Pro	Val	Asp	Asp	Thr	Val	Glu
							115	120			125				

Gly	Val	Thr	Gly	Asn	Leu	Phe	Asp	Ala	Tyr	Leu	Lys	Pro	Tyr	Phe	Leu
							130	135			140				

Glu	Ala	Tyr	Arg	Pro	Val	Arg	Lys	Gly	Asp	Leu	Phe	Leu	Val	Arg	Gly
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Gly	Met	Arg	Ser	Val	Glu	Phe	Lys	Val	Ile	Glu	Thr	Asp	Pro	Ala	Glu
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Tyr	Cys	Val	Val	Ala	Pro	Asp	Thr	Glu	Ile	Phe	Cys	Glu	Gly	Glu	Pro
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Val	Lys	Arg	Glu	Asp	Glu	Glu	Arg	Leu	Asp	Asp	Val	Gly	Tyr	Asp	Asp
							195	200			205				

Val	Gly	Gly	Val	Arg	Lys	Gln	Met	Ala	Gln	Ile	Arg	Glu	Leu	Val	Glu
							210	215			220				

Leu Pro Leu Arg His Pro Gln Leu Phe Lys Ser Ile Gly Val Lys Pro
 225 230 235 240

Pro Lys Gly Ile Leu Leu Tyr Gly Pro Pro Gly Ser Gly Lys Thr Leu
 245 250 255

Ile Ala Arg Ala Val Ala Asn Glu Thr Gly Ala Phe Phe Phe Cys Ile
 260 265 270

Asn Gly Pro Glu Ile Met Ser Lys Leu Ala Gly Glu Ser Glu Ser Asn
 275 280 285

Leu Arg Lys Ala Phe Glu Glu Ala Glu Lys Asn Ala Pro Ser Ile Ile
 290 295 300 320

Phe Ile Asp Glu Ile Asp Ser Ile Ala Pro Lys Arg Glu Lys Thr Asn
 305 310 315 320

Gly Glu Val Glu Arg Arg Ile Val Ser Gln Leu Leu Thr Leu Met Asp
 325 330 335

Gly Leu Lys Ser Arg Ala His Val Ile Val Met Gly Ala Thr Asn Arg
 340 345 350

Pro Asn Ser Ile Asp Pro Ala Leu Arg Arg Phe Gly Arg Phe Asp Arg
 355 360 365

Glu Ile Asp Ile Gly Val Pro Asp Glu Ile Gly Arg Leu Glu Val Leu
 370 375 380

Arg Ile His Thr Lys Asn Met Lys Leu Ala Glu Asp Val Asp Leu Glu
 385 390 395 400

Arg Ile Ser Lys Asp Thr His Gly Tyr Val Gly Ala Asp Leu Ala Ala
 405 410 415

Leu Cys Thr Glu Ala Ala Leu Gln Cys Ile Arg Glu Lys Met Asp Val
 420 425 430

Ile Asp Leu Glu Asp Asp Ser Ile Asp Ala Glu Ile Leu Asn Ser Met
 435 440 445

Ala Val Thr Asn Glu His Phe His Thr Ala Leu Gly Asn Ser Asn Pro
 450 455 460

Ser Ala Leu Arg Glu Thr Val Val Glu Val Pro Asn Val Ser Trp Asn
 465 470 475 480

Asp Ile Gly Gly Leu Glu Asn Val Lys Arg Glu Leu Gln Glu Thr Val
 485 490 495

Gln Tyr Pro Val Glu His Pro Glu Lys Phe Glu Lys Phe Gly Met Ser
 500 505 510

Pro Ser Lys Gly Val Leu Phe Tyr Gly Pro Pro Gly Cys Gly Lys Thr
 515 520 525

Leu Leu Ala Lys Ala Ile Ala Asn Glu Cys Gln Ala Asn Phe Ile Ser
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Val Lys Gly Pro Glu Leu Leu Thr Met Trp Phe Gly Glu Ser Glu Ala
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Asn Val Arg Glu Ile Phe Asp Lys Ala Arg Gln Ser Ala Pro Cys Val
 565 570 575

Leu Phe Phe Asp Glu Leu Asp Ser Ile Ala Thr Gln Arg Gly Gly
 580 585 590

Ser Gly Gly Asp Gly Gly Ala Ala Asp Arg Val Leu Asn Gln Leu
 595 600 605

Leu Thr Glu Met Asp Gly Met Asn Ala Lys Lys Thr Val Phe Ile Ile
 610 615 620

Gly Ala Thr Asn Arg Pro Asp Ile Ile Asp Ser Ala Leu Leu Arg Pro
 625 630 635 640

Gly Arg Leu Asp Gln Leu Ile Tyr Ile Pro Leu Pro Asp Glu Asp Ser
 645 650 655

Arg Leu Asn Ile Phe Lys Ala Ala Leu Arg Lys Ser Pro Ile Ala Lys
 660 665 670

Asp Val Asp Ile Gly Ala Leu Ala Lys Tyr Thr Gln Gly Phe Ser Gly
 675 680 685

Ala Asp Ile Thr Glu Ile Cys Gln Arg Ala Cys Lys Tyr Ala Ile Arg
 690 695 700

Glu Asn Ile Glu Lys Asp Ile Glu Lys Glu Lys Arg Arg Ser Glu Asn
 705 710 715 720

Pro Glu Ala Met Glu Glu Asp Gly Val Asp Glu Val Ser Glu Ile Lys
 725 730 735

Ala Ala His Phe Glu Glu Ser Met Lys Tyr Ala Arg Arg Ser Val Ser
 740 745 750

Asp Ala Asp Ile Arg Lys Tyr Gln Ala Phe Ala Gln Thr Leu Gln Gln
 755 760 765

Ser Arg Gly Phe Gly Ser Glu Phe Arg Phe Glu Asn Ser Ala Gly Ser
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Gly Ala Thr Thr Gly Val Ala Asp Pro Phe Ala Thr Ser Ala Ala Ala
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Ala Gly Asp Asp Asp Asp Leu Tyr Asn
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<210> 67

<211> 2847

<212> DNA

<213> *Arabidopsis thaliana*

<400> 67

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tgtcggatga aggagactga aatagtggaa cctttgactc catcagtgtt aaaaaatctg 420

gagcatcgcc atccatttgt tcgcaggaat gcaattctgg caatcatgtc gatataaaa 480

cttccacatg gcgaccaact cttcgatgc acctgaaa tgatcgagaa agttctatca 540

acagaacaag atccttctgc caagagaaaat gcatttctaa tgctcttac ctgtgccgaa	600
gaacgtgcag tgaattatct tctgagcaat gttgacaagg tttcagactg gaatgaatca	660
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<210> 68

<211> 948

<212> PRT

<213> *Arabidopsis thaliana*

<400> 68

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35	40	45

Glu Thr Ile Pro Gln Leu Phe Ile Thr Ile Ile Arg Tyr Val Leu Pro		
50	55	60

Ser Glu Asp His Thr Ile Gln Lys Leu Leu Leu Leu Tyr Leu Glu Leu			
65	70	75	80

Ile Glu Lys Thr Asp Ser Lys Gly Lys Val Leu Pro Glu Met Ile Leu		
85	90	95

Ile Cys Gln Asn Leu Arg Asn Asn Leu Gln His Pro Asn Glu Tyr Ile		
100	105	110

Arg Gly Val Thr Leu Arg Phe Leu Cys Arg Met Lys Glu Thr Glu Ile		
115	120	125

Val Glu Pro Leu Thr Pro Ser Val Leu Gln Asn Leu Glu His Arg His
130 135 140

.Pro Phe Val Arg Arg Asn Ala Ile Leu Ala Ile Met Ser Ile Tyr Lys
145 150 155 160

Leu Pro His Gly Asp Gln Leu Phe Val Asp Ala Pro Glu Met Ile Glu
165 170 175

Lys Val Leu Ser Thr Glu Gln Asp Pro Ser Ala Lys Arg Asn Ala Phe
180 185 190

Leu Met Leu Phe Thr Cys Ala Glu Glu Arg Ala Val Asn Tyr Leu Leu
195 200 205

Ser Asn Val Asp Lys Val Ser Asp Trp Asn Glu Ser Leu Gln Met Val
210 215 220

Val Leu Glu Leu Ile Arg Ser Val Cys Lys Thr Lys Pro Ala Glu Lys
225 230 235 240

Gly Lys Tyr Ile Lys Ile Ile Ser Leu Leu Ser Ala Thr Ser Ser
245 250 255

Ala Val Ile Tyr Glu Cys Ala Gly Thr Leu Val Ser Leu Ser Ser Ala
260 265 270

Pro Thr Ala Ile Arg Ala Ala Asn Thr Tyr Cys Gln Leu Leu Leu
275 280 285

Ser Gln Ser Asp Asn Asn Val Lys Leu Ile Leu Leu Asp Arg Leu Tyr
290 295 300

Glu Leu Lys Thr Leu His Arg Asp Ile Met Val Glu Leu Ile Ile Asp
305 310 315 320

Val Leu Arg Ala Leu Ser Ser Pro Asn Leu Asp Ile Arg Arg Lys Thr
325 330 335

Leu Asp Ile Ala Leu Asp Leu Ile Thr His His Asn Ile Asn Glu Val
340 345 350

Val Gln Met Leu Lys Lys Glu Val Val Lys Thr Gln Ser Gly Glu Leu
355 360 365

Glu Lys Asn Gly Glu Tyr Arg Gln Met Leu Ile Gln Ala Ile His Ala
370 375 380

Cys Ala Val Lys Phe Pro Glu Val Ala Ser Thr Val Val His Leu Leu
385 390 395 400

Met Asp Phe Leu Gly Asp Ser Asn Val Ala Ser Ala Leu Asp Val Val
405 410 415

Val Phe Val Arg Glu Ile Ile Glu Thr Asn Pro Lys Leu Arg Val Ser
420 425 430

Ile Ile Thr Arg Leu Leu Asp Thr Phe Tyr Gln Ile Arg Ala Gly Lys
435 440 445

Val Cys Pro Cys Ala Leu Trp Ile Ile Gly Glu Tyr Cys Leu Ser Leu
450 455 460

Ser Glu Val Glu Ser Gly Ile Ser Thr Ile Thr Gln Cys Leu Gly Glu
465 470 475 480

Leu Pro Phe Tyr Ser Val Ser Glu Glu Ser Glu Pro Thr Glu Thr Ser
485 490 495

Lys Lys Ile Gln Pro Thr Ser Ser Ala Met Val Ser Ser Arg Lys Pro
500 505 510

Val Ile Leu Ala Asp Gly Thr Tyr Ala Thr Gln Ser Ala Ala Ser Glu
515 520 525

Thr Thr Phe Ser Ser Pro Thr Val Val Gln Gly Ser Leu Thr Ser Gly
530 535 540

Asn Leu Arg Ala Leu Leu Leu Thr Gly Asp Phe Phe Leu Gly Ala Val
545 550 555 560

Val Ala Cys Thr Leu Thr Lys Leu Val Leu Arg Leu Glu Glu Val Gln
565 570 575

Ser Ser Lys Thr Glu Val Asn Lys Thr Val Ser Gln Ala Leu Leu Ile
580 585 590

Met Val Ser Ile Leu Gln Leu Gly Gln Ser Pro Val Ser Pro His Pro
 595 600 605

Ile Asp Asn Asp Ser Tyr Glu Arg Ile Met Leu Cys Ile Lys Leu Leu
 610 615 620

Cys His Arg Asn Val Glu Met Lys Lys Ile Trp Leu Glu Ser Cys Arg
 625 630 635 640

Gln Ser Phe Val Lys Met Ile Ser Glu Lys Gln Leu Arg Glu Met Glu
 645 650 655

Glu Leu Lys Ala Lys Thr Gln Thr Thr His Ala Gln Pro Asp Asp Leu
 660 665 670

Ile Asp Phe Phe His Leu Lys Ser Arg Lys Gly Met Ser Gln Leu Glu
 675 680 685

Leu Glu Asp Gln Val Gln Asp Asp Leu Lys Arg Ala Thr Gly Glu Phe
 690 695 700

Thr Lys Asp Glu Asn Asp Ala Asn Lys Leu Asn Arg Ile Leu Gln Leu
 705 710 715 720

Thr Gly Phe Ser Asp Pro Val Tyr Ala Glu Ala Tyr Val Thr Val His
 725 730 735

His Tyr Asp Ile Ala Leu Glu Val Thr Val Ile Asn Arg Thr Lys Glu
 740 745 750

Thr Leu Gln Asn Leu Cys Leu Glu Leu Ala Thr Met Gly Asp Leu Lys
 755 760 765

Leu Val Glu Arg Pro Gln Asn Tyr Ser Leu Ala Pro Glu Arg Ser Met
 770 775 780

Gln Ile Lys Ala Asn Ile Lys Val Ser Ser Thr Glu Thr Gly Val Ile
 785 790 795 800

Phe Gly Asn Ile Val Tyr Glu Thr Ser Asn Val Met Glu Arg Asn Val
 805 810 815

Val Val Leu Asn Asp Ile His Ile Asp Ile Met Asp Tyr Ile Ser Pro
 820 825 830

Ala Val Cys Ser Glu Val Ala Phe Arg Thr Met Trp Ala Glu Phe Glu
 835 840 845

Trp Glu Asn Lys Val Ala Val Asn Thr Thr Ile Gln Asn Glu Arg Glu
 850 855 860

Phe Leu Asp His Ile Ile Lys Ser Thr Asn Met Lys Cys Leu Thr Ala
 865 870 875 880

Pro Ser Ala Ile Ala Gly Glu Cys Gly Phe Leu Ala Ala Asn Leu Tyr
 885 890 895

Ala Lys Ser Val Phe Gly Glu Asp Ala Leu Val Asn Leu Ser Ile Glu
 900 905 910

Lys Gln Thr Asp Gly Thr Leu Ser Gly Tyr Ile Arg Ile Arg Ser Lys
 915 920 925

Thr Gln Gly Ile Ala Leu Ser Leu Gly Asp Lys Ile Thr Leu Lys Gln
 930 935 940

Lys Gly Gly Ser
 945

<210> 69

<211> 1086

<212> DNA

<213> *Arabidopsis thaliana*

<400> 69

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aaaggagctc tcgtcgagtt ttacgctccc tggtgtggtc actgcaagaa acttgctcca 180

gagtatgaaa agctaggggc aagcttcaag aaggctaagt ctgtgttgc tgcaaagggtt 240

gattgtgatg agcaaaagag tgtctgtact aaatatggtg ttagtgata cccaaaccatt 300

cagtggtttc ctaaaggatc tcttgaacct caaaagtatg agggtccacg caatgctgaa 360

gctttggctg aatacgtgaa caaggaagga ggcaccaacg taaaattagc tgcagttcca 420

caaaaacgtgg ttgtttgac acctgacaat ttcgatgaga ttgttctgga tcaaaaacaaa 480

gatgtcctag tcgaatttta tgcaccatgg tggccact gcaaatcaact cgctcccaca	540
tacgaaaagg tagccacagt gtttaaacag gaagaaggtg tagtcatcgc caatttggat	600
gctgatgcac acaaagccct tggcgagaaa tatggagtga gtggattccc aacattgaaa	660
ttcttcccaa aggacaacaa agctggcac gattatgacg gtggcagggta tttagatgac	720
tttgtaagct tcatcaacga gaaatctggg accagcaggg acagtaaagg gcagcttact	780
tcaaaggctg gtatagtcga aagcttagat gctttgtaa aagagttagt tgcaagctagt	840
gaagatgaga agaaggcagt gttgtctcgc atagaagagg aagcaagtac ccttaagggc	900
tccaccacga ggtatggaaa gcttacttg aaactcgcaa agagctacat agaaaaaggt	960
tcagactatg ctagcaaaga aacggagagg cttggacggg tgcttggaa gtcgataagt	1020
ccagtgaaag ctgatgaact cactctcaag agaaatatcc taaccacgtt cgttgcttct	1080
tcttaa	1086

<210> 70

<211> 361

<212> PRT

<213> Arabidopsis thaliana

<400> 70

Met Ala Lys Ser Gln Ile Trp Phe Gly Phe Ala Leu Leu Ala Leu Leu			
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Leu Val Ser Ala Val Ala Asp Asp Val Val Val Leu Thr Asp Asp Ser			
20	25	30	

Phe Glu Lys Glu Val Gly Lys Asp Lys Gly Ala Leu Val Glu Phe Tyr			
35	40	45	

Ala Pro Trp Cys Gly His Cys Lys Lys Leu Ala Pro Glu Tyr Glu Lys			
50	55	60	

Leu Gly Ala Ser Phe Lys Lys Ala Lys Ser Val Leu Ile Ala Lys Val			
65	70	75	80

Asp Cys Asp Glu Gln Lys Ser Val Cys Thr Lys Tyr Gly Val Ser Gly			
85	90	95	

Tyr Pro Thr Ile Gln Trp Phe Pro Lys Gly Ser Leu Glu Pro Gln Lys			
100	105	110	

Tyr Glu Gly Pro Arg Asn Ala Glu Ala Leu Ala Glu Tyr Val Asn Lys
115 120 125

Glu Gly Gly Thr Asn Val Lys Leu Ala Ala Val Pro Gln Asn Val Val
130 135 140

Val Leu Thr Pro Asp Asn Phe Asp Glu Ile Val Leu Asp Gln Asn Lys
145 150 155 160

Asp Val Leu Val Glu Phe Tyr Ala Pro Trp Cys Gly His Cys Lys Ser
165 170 175

Leu Ala Pro Thr Tyr Glu Lys Val Ala Thr Val Phe Lys Gln Glu Glu
180 185 190

Gly Val Val Ile Ala Asn Leu Asp Ala Asp Ala His Lys Ala Leu Gly
195 200 205

Glu Lys Tyr Gly Val Ser Gly Phe Pro Thr Leu Lys Phe Phe Pro Lys
210 215 220

Asp Asn Lys Ala Gly His Asp Tyr Asp Gly Gly Arg Asp Leu Asp Asp
225 230 235 240

Phe Val Ser Phe Ile Asn Glu Lys Ser Gly Thr Ser Arg Asp Ser Lys
245 250 255

Gly Gln Leu Thr Ser Lys Ala Gly Ile Val Glu Ser Leu Asp Ala Leu
260 265 270

Val Lys Glu Leu Val Ala Ala Ser Glu Asp Glu Lys Ala Val Leu
275 280 285

Ser Arg Ile Glu Glu Ala Ser Thr Leu Lys Gly Ser Thr Thr Arg
290 295 300

Tyr Gly Lys Leu Tyr Leu Lys Leu Ala Lys Ser Tyr Ile Glu Lys Gly
305 310 315 320

Ser Asp Tyr Ala Ser Lys Glu Thr Glu Arg Leu Gly Arg Val Leu Gly
325 330 335

Lys Ser Ile Ser Pro Val Lys Ala Asp Glu Leu Thr Leu Lys Arg Asn
340 345 350

Ile Leu Thr Thr Phe Val Ala Ser Ser
355 360

<210> 71
<211> 744
<212> DNA
<213> Arabidopsis thaliana

<400> 71
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cctccgggag atccaaagac gatgaagacg gtggtgatgg ataaaggagc ggcgtatgt 120
caatcggtga aaccgatcaa acagatgagt ctccatttgt gttcttcgc ttgttatgtt 180
cacgatccta gccgtcagat tgaagtcaac ttctatgttc atcgactcaa ccaagacttt 240
cttcaatgtg ctgtttacga ttgcgactcc tctaaacccc atctcatcgg gatcgagtat 300
attgtgtcgg agaggttatt tgagagtctt gatccggagg agcaaaagct ttggcactct 360
catgactatg agatccaaac aggccttcta gtaactccaa gggtccctga gctttagct 420
aagacagagc ttgaaaatat tgccaaaact tatggaaagt tttggtgac ttggcagacc 480
gatcgccggg ataaattgcc acttggtgca ccatcactta tgatgtcacc acaagacgtg 540
aatatggaa agatcaagcc agggctattt aagaaacgtg acgatgagta tggaaatctcg 600
acggaatctt tgaagacgtc tcgagttgga attatggac cggagaagaa aaattcgatg 660
gctgatttattt gggttcatca cggaaaagga ttagcggttt acataatcga aactgagatg 720
cagaaattgg ctccgttccc gtaa 744

<210> 72
<211> 247
<212> PRT
<213> *Arabidopsis thaliana*

<400> 72
Met Ala Ser Ser Asp Glu Arg Pro Gly Ala Tyr Pro Ala Arg Asp Gly
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Ser Glu Asn Leu Pro Pro Gly Asp Pro Lys Thr Met Lys Thr Val Val
20 25 30

Met Asp Lys Gly Ala Ala Met Met Gln Ser Leu Lys Pro Ile Lys Gln
35 40 45

Met Ser Leu His Leu Cys Ser Phe Ala Cys Tyr Gly His Asp Pro Ser
 50 55 60

Arg Gln Ile Glu Val Asn Phe Tyr Val His Arg Leu Asn Gln Asp Phe
 65 70 75 80

Leu Gln Cys Ala Val Tyr Asp Cys Asp Ser Ser Lys Pro His Leu Ile
 85 90 95

Gly Ile Glu Tyr Ile Val Ser Glu Arg Leu Phe Glu Ser Leu Asp Pro
 100 105 110

Glu Glu Gln Lys Leu Trp His Ser His Asp Tyr Glu Ile Gln Thr Gly
 115 120 125

Leu Leu Val Thr Pro Arg Val Pro Glu Leu Val Ala Lys Thr Glu Leu
 130 135 140

Glu Asn Ile Ala Lys Thr Tyr Gly Lys Phe Trp Cys Thr Trp Gln Thr
 145 150 155 160

Asp Arg Gly Asp Lys Leu Pro Leu Gly Ala Pro Ser Leu Met Met Ser
 165 170 175

Pro Gln Asp Val Asn Met Gly Lys Ile Lys Pro Gly Leu Leu Lys Lys
 180 185 190

Arg Asp Asp Glu Tyr Gly Ile Ser Thr Glu Ser Leu Lys Thr Ser Arg
 195 200 205

Val Gly Ile Met Gly Pro Glu Lys Lys Asn Ser Met Ala Asp Tyr Trp
 210 215 220

Val His His Gly Lys Gly Leu Ala Val Asp Ile Ile Glu Thr Glu Met
 225 230 235 240

Gln Lys Leu Ala Pro Phe Pro
 245

<210> 73

<211> 954

<212> DNA

<213> *Arabidopsis thaliana*

<400> 73

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agaagtgctg	aacagaggaa	agtcatcagg	caagcatacc	acgaaaccta	cggcgaagac	180
cttctcaaga	ctcttgacaa	ggagctctct	aacgatttcg	agagagctat	cttggttgtgg	240
actcttgaac	ccggtgagcg	tgatgcttta	ttggctaattg	aagctacaaa	aagatggact	300
tcaagcaacc	aagttcttat	ggaagttgct	tgcacaagga	catcaacgca	gctgcttcac	360
gctaggcaag	cttaccatgc	tcgctacaag	aagtctcttg	aagaggacgt	tgctcaccac	420
actaccggtg	acttcagaaa	gctttggtt	tctttgtta	cctcatacag	gtacgaagga	480
gatgaagtga	acatgacatt	ggctaagcaa	gaagctaagc	tggtccatga	gaaaatcaag	540
gacaaggact	acaatgatga	ggatgttatt	agaatcttgc	ccacaagaag	caaagctcag	600
atcaatgcta	cttttaaccg	ttaccaagat	gatcatggcg	aggaaattct	caagagtctt	660
gaggaaggag	atgatgatga	caagttcctt	gcactttga	ggtcaaccat	tcaagtgttg	720
acaagaccag	agctttactt	tgtcgatgtt	cttcgttcag	caatcaacaa	aactggaaact	780
gatgaaggag	cactcactag	aattgtgacc	acaagagctg	agattgactt	gaagggtcatt	840
ggagaggagt	accagcgcag	gaacagcatt	cctttggaga	aagctattac	caaagacact	900
cgtggagatt	acgagaagat	gctcgcgca	cttctcggtg	aagatgatgc	ttaa	954

<210> 74

<211> 317

<212> PRT

<213> *Arabidopsis thaliana*

<400> 74

Met	Ala	Thr	Leu	Lys	Val	Ser	Asp	Ser	Val	Pro	Ala	Pro	Ser	Asp	Asp
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Ala	Glu	Gln	Leu	Arg	Thr	Ala	Phe	Glu	Gly	Trp	Gly	Thr	Asn	Glu	Asp
									25					30	

Leu	Ile	Ile	Ser	Ile	Leu	Ala	His	Arg	Ser	Ala	Glu	Gln	Arg	Lys	Val
									40					45	

Ile	Arg	Gln	Ala	Tyr	His	Glu	Thr	Tyr	Gly	Glu	Asp	Leu	Leu	Lys	Thr
									55					60	

Leu	Asp	Lys	Glu	Leu	Ser	Asn	Asp	Phe	Glu	Arg	Ala	Ile	Leu	Leu	Trp
									70					75	

Thr Leu Glu Pro Gly Glu Arg Asp Ala Leu Leu Ala Asn Glu Ala Thr
 85 90 95

Lys Arg Trp Thr Ser Ser Asn Gln Val Leu Met Glu Val Ala Cys Thr
 100 105 110

Arg Thr Ser Thr Gln Leu Leu His Ala Arg Gln Ala Tyr His Ala Arg
 115 120 125

Tyr Lys Lys Ser Leu Glu Glu Asp Val Ala His His Thr Thr Gly Asp
 130 135 140

Phe Arg Lys Leu Leu Val Ser Leu Val Thr Ser Tyr Arg Tyr Glu Gly
 145 150 155 160

Asp Glu Val Asn Met Thr Leu Ala Lys Gln Glu Ala Lys Leu Val His
 165 170 175

Glu Lys Ile Lys Asp Lys His Tyr Asn Asp Glu Asp Val Ile Arg Ile
 180 185 190

Leu Ser Thr Arg Ser Lys Ala Gln Ile Asn Ala Thr Phe Asn Arg Tyr
 195 200 205

Gln Asp Asp His Gly Glu Glu Ile Leu Lys Ser Leu Glu Glu Gly Asp
 210 215 220

Asp Asp Asp Lys Phe Leu Ala Leu Leu Arg Ser Thr Ile Gln Cys Leu
 225 230 235 240

Thr Arg Pro Glu Leu Tyr Phe Val Asp Val Leu Arg Ser Ala Ile Asn
 245 250 255

Lys Thr Gly Thr Asp Glu Gly Ala Leu Thr Arg Ile Val Thr Thr Arg
 260 265 270

Ala Glu Ile Asp Leu Lys Val Ile Gly Glu Glu Tyr Gln Arg Arg Asn
 275 280 285

Ser Ile Pro Leu Glu Lys Ala Ile Thr Lys Asp Thr Arg Gly Asp Tyr
 290 295 300

Glu Lys Met Leu Val Ala Leu Leu Gly Glu Asp Asp Ala
 305 310 315

<210> 75
 <211> 1170
 <212> DNA
 <213> *Arabidopsis thaliana*

<400> 75	
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atggcccttg catggccatt actgtcttc attagcttct ccgaacgggc ttacaactct	120
tatttcgcca ccgaaaatat ggaagataaa gtagttgtca tcaccggagc ttcatcgccc	180
attggagagc aaatagcata tgaatatgca aaaagaggag cgaatttgggt gttggtggcg	240
aggagagagc agagactgag agttgtgagt aataaggcta aacagattgg agccaaccat	300
gtgatcatca tcgctgctga tgtcatcaaa gaagatgact gccgcgcgtt tataccccaa	360
gccgtcaact attacggccg cgtggatcat cttagtgaata cagcgagtct tggacacact	420
ttttactttg aggaagtgag tgacacgact gtgtttccac atttgcgttga cataaacttc	480
tgggggaatg tttatccgac atacgttagcg ttgccataacc ttcaccagac gaatggccga	540
atagtcgtga atgcatcggt tgaaaactgg ttgcctctac cacggatgag tctttattct	600
gctgcaaaag cagcattagt caacttctat gagacgctgc gtttcgagct aaatggagac	660
gttggtataa ctatcgac tcacgggtgg attggcagtg agatgagtgg aggaaagttc	720
atgctagaag aaggtgctga gatgcaatgg aaggaagaga gagaagtacc tgcaaatgg	780
ggaccgctag aggaatttgc aaagatgatt gtggcaggag cttgttagggg agatgcata	840
gtgaagtttc caaactggta cgatgtctt ctcctctatc gagtcttcac accgaatgta	900
ctgagatgga cattcaagtt gttactgtct actgagggtta cacgtagaag ctcccttgg	960
ggggtcgggt caggtatgcc tgtggatgaa tcctcttcac aaatgaaact tatgcttga	1020
ggaggaccac ctcgagttcc tgcaagcccc cctaggtata ccgcaagccc acctcattat	1080
accgcaagcc caccacggta tcctgcaagc ccacctcggt atcctgcgag cccacctcg	1140
ttttcacagt ttaatatcca agagttgtaa	1170

<210> 76
 <211> 389
 <212> PRT
 <213> *Arabidopsis thaliana*

<400> 76

Met	Val	Asp	Leu	Leu	Asn	Ser	Val	Met	Asn	Leu	Val	Ala	Pro	Pro	Ala
1				5				10					15		

Thr	Met	Val	Val	Met	Ala	Phe	Ala	Trp	Pro	Leu	Leu	Ser	Phe	Ile	Ser
			20					25				30			

Phe	Ser	Glu	Arg	Ala	Tyr	Asn	Ser	Tyr	Phe	Ala	Thr	Glu	Asn	Met	Glu
						35		40			45				

Asp	Lys	Val	Val	Val	Ile	Thr	Gly	Ala	Ser	Ser	Ala	Ile	Gly	Glu	Gln
					50		55				60				

Ile	Ala	Tyr	Glu	Tyr	Ala	Lys	Arg	Gly	Ala	Asn	Leu	Val	Leu	Val	Ala
					65		70			75		80			

Arg	Arg	Glu	Gln	Arg	Leu	Arg	Val	Val	Ser	Asn	Lys	Ala	Lys	Gln	Ile
					85				90			95			

Gly	Ala	Asn	His	Val	Ile	Ile	Ile	Ala	Ala	Asp	Val	Ile	Lys	Glu	Asp
					100			105			110				

Asp	Cys	Arg	Arg	Phe	Ile	Thr	Gln	Ala	Val	Asn	Tyr	Tyr	Gly	Arg	Val
					115		120			125					

Asp	His	Leu	Val	Asn	Thr	Ala	Ser	Leu	Gly	His	Thr	Phe	Tyr	Phe	Glu
					130		135			140					

Glu	Val	Ser	Asp	Thr	Thr	Val	Phe	Pro	His	Leu	Leu	Asp	Ile	Asn	Phe
					145		150			155		160			

Trp	Gly	Asn	Val	Tyr	Pro	Thr	Tyr	Val	Ala	Leu	Pro	Tyr	Leu	His	Gln
					165			170			175				

Thr	Asn	Gly	Arg	Ile	Val	Val	Asn	Ala	Ser	Val	Glu	Asn	Trp	Leu	Pro
					180			185			190				

Leu	Pro	Arg	Met	Ser	Leu	Tyr	Ser	Ala	Ala	Lys	Ala	Ala	Leu	Val	Asn
					195			200			205				

Phe	Tyr	Glu	Thr	Leu	Arg	Phe	Glu	Leu	Asn	Gly	Asp	Val	Gly	Ile	Thr
					210		215			220					

Ile Ala Thr His Gly Trp Ile Gly Ser Glu Met Ser Gly Gly Lys Phe
 225 230 235 240

Met Leu Glu Glu Gly Ala Glu Met Gln Trp Lys Glu Glu Arg Glu Val
 245 250 255

Pro Ala Asn Gly Gly Pro Leu Glu Glu Phe Ala Lys Met Ile Val Ala
 260 265 270

Gly Ala Cys Arg Gly Asp Ala Tyr Val Lys Phe Pro Asn Trp Tyr Asp
 275 280 285

Val Phe Leu Leu Tyr Arg Val Phe Thr Pro Asn Val Leu Arg Trp Thr
 290 295 300

Phe Lys Leu Leu Leu Ser Thr Glu Gly Thr Arg Arg Ser Ser Leu Val
 305 310 315 320

Gly Val Gly Ser Gly Met Pro Val Asp Glu Ser Ser Ser Gln Met Lys
 325 330 335

Leu Met Leu Glu Gly Gly Pro Pro Arg Val Pro Ala Ser Pro Pro Arg
 340 345 350

Tyr Thr Ala Ser Pro Pro His Tyr Thr Ala Ser Pro Pro Arg Tyr Pro
 355 360 365

Ala Ser Pro Pro Arg Tyr Pro Ala Ser Pro Pro Arg Phe Ser Gln Phe
 370 375 380

Asn Ile Gln Glu Leu
 385

<210> 77

<211> 990

<212> DNA

<213> *Arabidopsis thaliana*

<400> 77

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gaagctacta gtctaaaccc tggatggaaaattcaga aaggaatgat ccccccattt 180

ctgccccgca agtccccctg cattccagct actgatgttg ctggagaggt cggtgagggt 240

ggatcaggag taaaaaattt	taaggctggt	gacaaagttg	tagcggtct	tagccatcta	300
ggtggaggtg	gacttgctga	gttcgctgtt	gcaaccgaga	agctgactgt	360
caagaagtgg	gagcagctga	agcagcagct	ttacctgtgg	cgggtctaac	420
gctcttacta	atcctgcggg	gttgaagctg	gatggtacag	gcaagaaggc	480
gtcacacgcag	catctggtgg	ggttggtcac	tatgcagtcc	agctggcaaa	540
gctcacgtaa	ccgctacatg	tggtgcccg	aacatagagt	ttgtcaaatc	600
gatgagggttc	tcgactacaa	gactcccgag	ggagccgccc	tcaagagtcc	660
aaatatgacg	ctgtggtcca	ttgtgcaaac	gggattccat	tttcggtatt	720
ttgtcgaaaa	acgggaaggt	gatagacatc	acaccggggc	ctaatgcaat	780
gcggtaaga	aaataaccat	gtcaaagaag	cagttagtgc	cactcttgtt	840
gctgagaatt	tggagtttat	ggtgaatcta	gtgaaagaag	ggaaagtgaa	900
gactcaaagc	atcctttgag	caaagcggag	gatgcttggg	ccaaaagtat	960
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<210> 78

<211> 329

<212> PRT

<213> *Arabidopsis thaliana*

<400> 78

Met	Ala	Gly	Lys	Leu	Met	His	Ala	Leu	Gln	Tyr	Asn	Ser	Tyr	Gly	Gly
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Gly	Ala	Ala	Gly	Leu	Glu	His	Val	Gln	Val	Pro	Val	Pro	Thr	Pro	Lys
				20				25					30		

Ser	Asn	Glu	Val	Cys	Leu	Lys	Leu	Glu	Ala	Thr	Ser	Leu	Asn	Pro	Val
				35				40				45			

Asp	Trp	Lys	Ile	Gln	Lys	Gly	Met	Ile	Arg	Pro	Phe	Leu	Pro	Arg	Lys
			50				55				60				

Phe	Pro	Cys	Ile	Pro	Ala	Thr	Asp	Val	Ala	Gly	Glu	Val	Val	Glu	Val
			65				70			75			80		

Gly	Ser	Gly	Val	Lys	Asn	Phe	Lys	Ala	Gly	Asp	Lys	Val	Val	Ala	Val
				85				90				95			

Leu Ser His Leu Gly Gly Gly Leu Ala Glu Phe Ala Val Ala Thr
 100 105 110

Glu Lys Leu Thr Val Lys Arg Pro Gln Glu Val Gly Ala Ala Glu Ala
 115 120 125

Ala Ala Leu Pro Val Ala Gly Leu Thr Ala Leu Gln Ala Leu Thr Asn
 130 135 140

Pro Ala Gly Leu Lys Leu Asp Gly Thr Gly Lys Lys Ala Asn Ile Leu
 145 150 155 160

Val Thr Ala Ala Ser Gly Gly Val Gly His Tyr Ala Val Gln Leu Ala
 165 170 175

Lys Leu Ala Asn Ala His Val Thr Ala Thr Cys Gly Ala Arg Asn Ile
 180 185 190

Glu Phe Val Lys Ser Leu Gly Ala Asp Glu Val Leu Asp Tyr Lys Thr
 195 200 205

Pro Glu Gly Ala Ala Leu Lys Ser Pro Ser Gly Lys Lys Tyr Asp Ala
 210 215 220

Val Val His Cys Ala Asn Gly Ile Pro Phe Ser Val Phe Glu Pro Asn
 225 230 235 240

Leu Ser Glu Asn Gly Lys Val Ile Asp Ile Thr Pro Gly Pro Asn Ala
 245 250 255

Met Trp Thr Tyr Ala Val Lys Ile Thr Met Ser Lys Lys Gln Leu
 260 265 270

Val Pro Leu Leu Leu Ile Pro Lys Ala Glu Asn Leu Glu Phe Met Val
 275 280 285

Asn Leu Val Lys Glu Gly Lys Val Lys Thr Val Ile Asp Ser Lys His
 290 295 300

Pro Leu Ser Lys Ala Glu Asp Ala Trp Ala Lys Ser Ile Asp Gly His
 305 310 315 320

Ala Thr Gly Lys Ile Ile Val Glu Pro
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<210> 79
 <211> 1389
 <212> DNA
 <213> *Physcomitrella patens*

<400> 79						
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aactggaatc	tcatagcaga	gaaacttcag	ggtcgatcag	ggaaaagctg	caggctacgg	180
tggttcaatc	agctggaccc	tcgcataac	cggcacccat	tctcggaga	agaggaagag	240
cggctgctta	tagcacacaa	gcgcgtacggc	aacaagtggg	cattgatcgc	gcgcctcttt	300
ccggggccgca	cagacaacgc	ggtgaagaat	cactggcacg	ttgtgacggc	aagacagtcc	360
cgtgaacgga	cacgaactta	cggccgtatc	aaaggtccgg	tacatcgaag	aggcaagggt	420
aaccgtatca	atacctccgc	acttgaaat	taccatcacg	attcgaaggg	agctctcaca	480
gcctggattt	agtcgaagta	tgcgcacagtc	gagcagtctg	cggaagggt	cgcttaggtct	540
ccttgtaccg	gcagaggctc	tcctcctcta	cccaccgggt	tcagtatacc	gcagatttcc	600
ggcggcgcct	tccatcgacc	gacaaacatg	agtactagtc	ctcttagcga	tgtgactatc	660
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aagccaatgg	gagatcccag	gtcagtatgc	ttgcccattt	cgactgtttc	cgacaaggcag	780
caagtgcgtc	agagtaattc	catcgacggt	cagatctcct	ccgggctcca	gacaagcgca	840
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tcctgtgtt	gattgaagtc	aaattttcag	gggagtctcc	atcctggcg	tgttagatct	960
tcttggaaatc	aatcccttcc	ccactgtttt	ggccacagta	acaagtttgt	ggaggagtgc	1020
aggagttcta	caggcgcatg	cactgaacgc	tctgagattc	tgcaagaaca	gcattctagc	1080
cttcagttta	aatgcagcac	tgcgtacaat	actggaagat	atcaacatga	aaacctttgt	1140
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ttctccggcc	tagtgaagca	tcgccaagag	aggttgtgca	aagatagtgg	atctgctctc	1260
aagctggac	tatcatgggt	tacatccgat	agcactcttg	acttgagtgt	tgccaaaatg	1320
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<210> 80

<211> 462

<212> PRT

<213> Physcomitrella patens

<400> 80

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Cys	Pro	Arg	Gly	His	Trp	Arg	Pro	Ala	Glu	Asp	Asp	Lys	Leu	Arg	Glu
20								25					30		

Leu	Val	Ser	Gln	Phe	Gly	Pro	Gln	Asn	Trp	Asn	Leu	Ile	Ala	Glu	Lys
35							40				45				

Leu	Gln	Gly	Arg	Ser	Gly	Lys	Ser	Cys	Arg	Leu	Arg	Trp	Phe	Asn	Gln
50						55				60					

Leu	Asp	Pro	Arg	Ile	Asn	Arg	His	Pro	Phe	Ser	Glu	Glu	Glu	Glu	Glu
65					70					75			80		

Arg	Leu	Leu	Ile	Ala	His	Lys	Arg	Tyr	Gly	Asn	Lys	Trp	Ala	Leu	Ile
					85				90				95		

Ala	Arg	Leu	Phe	Pro	Gly	Arg	Thr	Asp	Asn	Ala	Val	Lys	Asn	His	Trp
					100			105				110			

His	Val	Val	Thr	Ala	Arg	Gln	Ser	Arg	Glu	Arg	Thr	Arg	Thr	Tyr	Gly
					115			120			125				

Arg	Ile	Lys	Gly	Pro	Val	His	Arg	Arg	Gly	Lys	Gly	Asn	Arg	Ile	Asn
					130			135			140				

Thr	Ser	Ala	Leu	Gly	Asn	Tyr	His	His	Asp	Ser	Lys	Gly	Ala	Leu	Thr
					145			150		155			160		

Ala	Trp	Ile	Glu	Ser	Lys	Tyr	Ala	Thr	Val	Glu	Gln	Ser	Ala	Glu	Gly
					165				170			175			

Leu	Ala	Arg	Ser	Pro	Cys	Thr	Gly	Arg	Gly	Ser	Pro	Pro	Leu	Pro	Thr
					180			185			190				

Gly	Phe	Ser	Ile	Pro	Gln	Ile	Ser	Gly	Gly	Ala	Phe	His	Arg	Pro	Thr
					195			200			205				

Asn Met Ser Thr Ser Pro Leu Ser Asp Val Thr Ile Glu Ser Pro Lys
210 215 220

Phe Ser Asn Ser Glu Asn Ala Gln Ile Ile Thr Ala Pro Val Leu Gln
225 230 235 240

Lys Pro Met Gly Asp Pro Arg Ser Val Cys Leu Pro Asn Ser Thr Val
245 250 255

Ser Asp Lys Gln Gln Val Leu Gln Ser Asn Ser Ile Asp Gly Gln Ile
260 265 270

Ser Ser Gly Leu Gln Thr Ser Ala Ile Val Ala His Asp Glu Lys Ser
275 280 285

Gly Val Ile Ser Met Asn His Gln Ala Pro Asp Met Ser Cys Val Gly
290 295 300

Leu Lys Ser Asn Phe Gln Gly Ser Leu His Pro Gly Ala Val Arg Ser
305 310 315 320

Ser Trp Asn Gln Ser Leu Pro His Cys Phe Gly His Ser Asn Lys Leu
325 330 335

Val Glu Glu Cys Arg Ser Ser Thr Gly Ala Cys Thr Glu Arg Ser Glu
340 345 350

Ile Leu Gln Glu Gln His Ser Ser Leu Gln Phe Lys Cys Ser Thr Ala
355 360 365

Tyr Asn Thr Gly Arg Tyr Gln His Glu Asn Leu Cys Gly Pro Ala Phe
370 375 380

Ser Gln Gln Asp Thr Ala Asn Glu Val Ala Asn Phe Ser Thr Leu Ala
385 390 395 400

Phe Ser Gly Leu Val Lys His Arg Gln Glu Arg Leu Cys Lys Asp Ser
405 410 415

Gly Ser Ala Leu Lys Leu Gly Leu Ser Trp Val Thr Ser Asp Ser Thr
420 425 430

Leu Asp Leu Ser Val Ala Lys Met Ser Ala Ser Gln Pro Glu Gln Ser
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Ala Pro Val Ala Phe Ile Asp Phe Leu Gly Val Gly Ala Ala
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 <211> 963
 <212> DNA
 <213> Arabidopsis thaliana

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 aaccatggac taccatata tctaattggac aacattgaga gatgacaaa ggaacactac 180
 aagaaacata t ggaacaaaaa gttcaaagaa atgcttcgtt ccaaaggaaa agataccctc 240
 gagaccgaag ttgaagatgt cgattggaa agcactttct acctccatca tctccctcaa 300
 tctaacctat acgacatccc tgatatgtca aatgaatacc gattggcaat gaaggatttt 360
 g ggaagaggc ttgagattct agctgaagag ctattggact tttgtgtga gaatctagg 420
 ttggagaaag ggtacttgaa gaaggatgtt catggacaa cgggtccaaac tttgcgaca 480
 aagcttagca actatccacc atgtccaaa ccagagatga tcaaaggct tagggctcac 540
 acagatgcag gaggcctcat tttgctgtt caagatgata aggtcagtgg tctccagctt 600
 cttaaagatg gtgattgggt tgatgttctt cctctcaagc attccattgt catcaacctt 660
 ggtgaccaac ttgaggtgat aacaaacggg aagtacaaga gtgtaatgca cctgtgtat 720
 acccagaaag aaggaaacag gatgtctatc gcgtcggtt acaacccgg aagcgatgt 780
 gagatctctc cggcaacatc tttgtggat aaagactcaa aatacccaag ctttgcgtt 840
 gatgactaca t gaaactcta tggccggactc aagtttcagg ccaaggagcc acggttcgag 900
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 taa 963

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 <211> 320
 <212> PRT
 <213> Arabidopsis thaliana

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 20 25 30

Asn Trp Gly Phe Phe Glu Leu Val Asn His Gly Leu Pro Tyr Asp Leu
 35 40 45

Met Asp Asn Ile Glu Arg Met Thr Lys Glu His Tyr Lys Lys His Met
 50 55 60

Glu Gln Lys Phe Lys Glu Met Leu Arg Ser Lys Gly Leu Asp Thr Leu
 65 70 75 80

Glu Thr Glu Val Glu Asp Val Asp Trp Glu Ser Thr Phe Tyr Leu His
 85 90 95

His Leu Pro Gln Ser Asn Leu Tyr Asp Ile Pro Asp Met Ser Asn Glu
 100 105 110

Tyr Arg Leu Ala Met Lys Asp Phe Gly Lys Arg Leu Glu Ile Leu Ala
 115 120 125

Glu Glu Leu Leu Asp Leu Leu Cys Glu Asn Leu Gly Leu Glu Lys Gly
 130 135 140

Tyr Leu Lys Lys Val Phe His Gly Thr Thr Gly Pro Thr Phe Ala Thr
 145 150 155 160

Lys Leu Ser Asn Tyr Pro Pro Cys Pro Lys Pro Glu Met Ile Lys Gly
 165 170 175

Leu Arg Ala His Thr Asp Ala Gly Gly Leu Ile Leu Leu Phe Gln Asp
 180 185 190

Asp Lys Val Ser Gly Leu Gln Leu Leu Lys Asp Gly Asp Trp Val Asp
 195 200 205

Val Pro Pro Leu Lys His Ser Ile Val Ile Asn Leu Gly Asp Gln Leu
 210 215 220

Glu Val Ile Thr Asn Gly Lys Tyr Lys Ser Val Met His Arg Val Met
 225 230 235 240

Thr Gln Lys Glu Gly Asn Arg Met Ser Ile Ala Ser Phe Tyr Asn Pro
 245 250 255

Gly Ser Asp Ala Glu Ile Ser Pro Ala Thr Ser Leu Val Asp Lys Asp
 260 265 270

Ser Lys Tyr Pro Ser Phe Val Phe Asp Asp Tyr Met Lys Leu Tyr Ala
 275 280 285

Gly Leu Lys Phe Gln Ala Lys Glu Pro Arg Phe Glu Ala Met Lys Asn
 290 295 300

Ala Glu Ala Ala Ala Asp Leu Asn Pro Val Ala Val Val Glu Thr Phe
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<210> 83

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

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36

<210> 84

<211> 32

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

<400> 84

gcttaattaa ttaagggcac ttgagacggc ca

32

<210> 85

<211> 35

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<400> 85

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35

<210> 86

<211> 37

<212> DNA

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<210> 118
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<210> 119
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<210> 138
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<210> 139
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<212> DNA
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<210> 142
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<210> 143
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<210> 154
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